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ABSTRACT

This handbook presents course information, reading materials, and sample exercises for a distance education course designed to enhance an understanding of the nature of workplace literacy needs and to show how to develop and teach in workplace literacy and basic skills programs. The first section of the handbook discusses the structure of the course, the assessment scheme, texts, and assignments. The second section presents brief introductions and reading materials for the two required modules of the course, which address the need for workplace literacy and planning issues. The third section presents six elective modules (consisting of reading materials, sample exercises, and lists of resources) which address writing a proposal, conducting a task analysis, designing curriculum materials, selecting supplementary materials, developing lesson plans, and constructing evaluation measures. (RS)

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ED 399 515

Education L530:
Developing Workplace Literacy Programs
Course Handbook I

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Sections:

I. **Course overview:**
structure, assessment scheme, texts and assignments

II. **Required modules (1 and 2)**

III. **Elective modules (3 through 8)**

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Education L 530

Developing Workplace Literacy Programs

This course is designed to enhance an understanding of the nature of workplace literacy needs and to show how to develop and teach in workplace literacy and basic skills programs. The objectives of the course are to learn how to:

1) appreciate the nature of workplace literacy and the kinds of literacy demands facing workers and employers;

2) understand the factors involved in planning a workplace literacy program;

3) assess the needs of a particular workforce and put forward a plan for meeting those needs;

4) conduct a task analysis to find out the detailed literacy needs of job tasks;

5) develop custom-designed curriculum that provides for workplace needs;

6) select commercial materials that will supplement the custom-designed curriculum;

7) build lessons around custom-designed material, learner example material, and commercial material;

8) evaluate the success of the program using a mixture of standard and custom-designed measures.

Structure of the Course

A total of 8 modules is available, with 2 assigned and 6 elective.

Your work will be based on 6 of those modules: the 2 assigned plus 4 of the electives. You will choose 2 of your 4 elective modules in which to complete extensive applications.

Assigned modules

1. The need for workplace literacy: what is workplace literacy?, literacy and language issues, need for programs.

2. Planning issues: type of program, target audience, level of involvement, recruitment.

Each assigned module consists of readings and is assessed by a focused response paper.

Elective modules (choose 4 of 6)

3. Proposal writing: need, courses, timing, recruitment, curriculum, and personnel.

4. Task analysis: assessing detailed literacy needs of workers.

5. Curriculum materials: custom-designing from a task analysis.

6. Supplementary materials: choosing appropriate available materials.

7. Lesson plans: integrating custom-designed material, learner example material, and supplementary material.

8. Evaluation: need, methods, instruments, analysis, and feedback.

Each elective module consists of readings and a sample exercise, and is assessed by a practice exercise. You will receive feedback on your practice exercises in preparation for extensive applications in two of the four modules for which you have completed the practice exercises.

Assessment scheme

Submission 1: Response papers for Modules 1 and 2 [20 points x 2 = 40]

Submission 2: Practice exercises for two Electives [10 points x 2 = 20]

Submission 3: Practice exercises for two Electives [10 points x 2 = 20]

You will receive feedback on these practice exercises in preparation for Submission 4, which consists of extensive applications in two of the four modules for which you have completed practice exercises.

Submission 4: Applications for two Electives [40 points x 2 = 80]

Course Texts

Mikulecky, L., Lloyd, P., Kirkley, J., & Oelker, J. (1996). *Developing and Evaluating Workplace Literacy Programs: A Handbook for Practitioners and Trainers*. Philadelphia, PA: National Center on Adult Literacy. [Referred to in the modules as the Handbook.]

Drew, R., & Mikulecky, L. (1988). *How to gather and develop job specific literacy materials for basic skills instruction.* Bloomington, IN: Office of Education and Training Resources, School of Education, Indiana University. (ERIC Document Reproduction Service No. ED 297 160). [Referred to in the modules as Drew & Mikulecky.]

ASSIGNMENTS

RESPONSE PAPERS

Module 1 — The Need for Workplace Literacy
Write a focused response paper of 2-3 pages, based on the readings for the module, designed to convince your congress representative of the importance of workplace literacy to the nation, your state, region or city.

Module 2 — Planning Issues
Write a focused response paper of 2-3 pages, based on the readings for the module, designed to convince an employer/union committee of the need for certain elements in a workplace literacy program.

PRACTICE EXERCISES

Each of these practice exercises should be about one page in length. For examples similar to these practice exercises, see the texts of Modules 3-8.

Module 3 — Proposal Writing
Write notes outlining a proposal narrative for a workplace literacy program at Product Line Inc. (described below). Include notes on the need for the program, the types and sizes of classes, when and how often they should meet, outline of curriculum, amount of custom-designing, and recruitment strategies.

Product Line Inc
This manufacturing company in a very competitive market is reorganizing its whole structure for greater efficiency. It is cutting out middle management and shop-floor supervisors, in favor of developing flexible and self-directed work teams. The members of each team will decide among themselves how best to meet the demand for "their products" at the next stage of the production process. The workforce of 180 will be divided into 18 teams of 10, with a group of 6 teams on each of the three shifts, so that production can continue 24 hours a day.

Because of these changes, the company sees a need to educate its workers in the areas of quality, efficiency and teamwork. To maintain product quality, they are introducing Statistical Process Control, which workers will need to learn how to operate. To become more efficient, they want teams to keep inventory low and to be able to make quick switches from one product to another in their area. All of this will require teamwork, involving cooperation with other workers, clear communication (including brainstorming and note-taking in meetings), and rapid decision-making.

Module 4 — Task Analysis

Conduct a task analysis for the everyday task "Mail order catalog" described below. Read the description to each person you ask to do the task. Observation of 2-3 people performing the task should be part of your analysis. In your conclusion, you should decide which aspects you would concentrate on if you were teaching this task, with reasons based on needed skills and possibly cost factors.

[If a clothing catalog is not available, write your own task description for another catalog and include comparable details in your description.]

Mail order catalog

You want to order some new shirts from a clothing mail order catalog. Look through the catalog to decide what you want (number, style, price range, etc), carry out any other steps needed, and fill out the order form.

Describe in detail everything you do.

Module 5 — Curriculum Materials

Outline the design of curriculum materials for teaching the workplace literacy topic "Writing conduct reports" described below. These materials should be for two hours of class activity. Describe the materials and outline how you would use them. (It may help to imagine that you are providing these materials for another teacher to use.)

Writing conduct reports

Prison corrections officers are writing unclear and ungrammatical reports on inmate offenses, which then do not hold up at disciplinary hearings, and so cases are being dismissed. An examination of current reports has shown that they include very long sentences, mis-spelled technical language, and a lack of objectivity.

Module 6 — Supplementary Materials

Review two items from the publicly-available materials on a workplace topic, making recommendations for the use of other teachers. These could be commercially-produced textbooks, curriculum materials entered into the ERIC database system, or materials available on the Internet. Include an annotated list of items and your judgements on their relevance, intended use, coverage of material, instructional method, reading level, and price.

Example topics:

- grammar for writing a memo or report;
- reading tables for use of labels, manuals or forms;
- cooperative exercises for developing teamwork;
- fractions for measurement;
- statistical terms and techniques for Statistical Process Control;
- reading graphs for inventory control;
- technical language for low-level readers or ESL workers.

Module 7 — Lesson plans

Plan the outline of 10 hours of instruction for the workplace literacy topic "Dealing with complaints" described below. Set out an overview of your plan, including objectives, materials and activities connected with your teaching. (You do not need to produce the materials—just describe what they would be.)

Dealing with complaints

In a large department store, customer service personnel in the complaints department are having difficulty with telephone complaints. Problems include reading the store handbook, working with computerized order details, talking to customers, taking good notes, and setting priorities (e.g., between the standard "send it in" and the emergency "service now"). This generates problems of lost or misunderstood complaints, customer dissatisfaction—and loss of sales.

Module 8 — Evaluation

Develop a set of 3 job-related scenario questions for the workplace newsletter article "Competitor Close-Up" given below. You should write one factual, one inference and one application question, and supply model answers for the questions.

Competitor Close-Up

This article is on the next page.

Competitor Close-Up: A Year in Review

Throughout the year, the **Delco Doings** has brought you profiles on the companies trying to take a bite out of our business and our profits. Sometimes there were success stories, when Rochester Operations met the challenge and came out on top. Other times we had to face the fact that there are companies in Asia, Europe, and right here at home that are reaching the market better, faster or with lower prices.

Here's a quick recap of the competitors we've covered this year.

ASMO, Inc.
Location: Battle Creek, Michigan; Statesville, North Carolina; Kosai City, Japan.
Affiliate: Nippondeso
Products: wiper systems, windshield washer systems, power window lifts, antennas, retractable and blower motors.
Main Customers: Nippondeso, Ford, Chrysler, General Motors, and every Japanese transplant except Nissan.
Number of Employees: Battle Creek, 130; Statesville, 400.
Total Wage and Benefit Cost/Hour: $9.58

Jidoco
Location: Bardstown, Kentucky;Yokohama City, Japan; Nine production facilities throughout Japan
Affiliates: Hitachi (24%), Nissan (21%)
Products: wipers, transmissions, reservoirs arms and blades, wiper motors, and others. Control-- wiper switches and others. Motors -- power seat sliders, power window, door lock, blower and engine cooling motors and others.
Accessories: air compressors, power window kits, door locks, rain-sensing intermittent wiper controls and others.
Main Customers: Nissan, Isuzu, Honda, Mitsubishi, Mazda, and Suzuki.
Number of Employees: Bardstown, 60 in 1987
Total Wage and Benefit Cost/Hour: $10.27

Power Motion
Location: Two plants in London, Ontario
Parent: Siemans Automotive of West Germany
Products: air moving motors (5,250 armatures a day)
Main Customer: GM of US & Canada
Number of Employees: 200 at main facility in London, Ontario
Total Wage and Benefit Cost/Hour: $11.50 (U.S. equivalent)

BG Automotive Motors, Inc.
Location: Hendersonville, TN.
Parents: Bosch Corporation and General Electric Company
Products: 20 different small motors including: engine cooling, modular wipers, door lock, seat back, head rest, sun-roof, washer pump, head lamp, power window.
Number of Employees: 275
Total Wage and Benefit Cost/Hour: Unknown at this time.

Every day another company steps into the automotive arena ready to try to take away our customers. Rochester Operations has an extensive communication network to keep employees informed about our competitors and what we're doing to stay ahead. Look to **Delco Doings** to give you the information you need to help keep Rochester Operations competitive in the '90s.

From: **Delco Doings**, December/January, 1991, p.2.

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APPLICATIONS

Choose two of the electives for which you have completed practice exercises and received feedback. For each of these electives, develop a detailed application, following the guidelines below. It is preferable that your application be based in a real workplace situation, but, if one is not available to you, develop your own fictional workplace setting.

In either case, describe the workplace and the program in sufficient detail to set the applications you develop in a clear context. Such details might include (depending on the module concerned) the nature of the work and workplace, any organizational changes taking place, the size and education level of the workforce, the education needs of the workforce, and the types of classes being provided.

Note: Your assignments are very likely to include new ideas and information of use to other educators. We plan to make available on the Internet a selection of the assignments from this course. Therefore, please provide contact details with your assignments in case other educators wish to ask for further information.

Module 3 — Proposal Writing

Write a proposal narrative of 4-5 pages for a workplace literacy program, including the need for the program, its goals, the types and sizes of classes, when and how often they should meet, personnel required, space and materials needed, outline of curriculum, amount of custom-designing and lead-time required, recruitment strategies, and methods of evaluation.

(Use a real workplace situation or base your proposal on your own fictional workplace setting.)

Module 4 — Task Analysis

Conduct a task analysis for a workplace job in a real workplace situation. Observation of workers performing the task, or interviews with workers using actual materials, should be part of your analysis. In your conclusion, you should decide which aspects to concentrate on, with reasons based on needed skills, safety and cost factors, and potential loss of customers. (4-5 pages)

Possible example jobs are:

- bank teller taking telephone call, making notes, and writing memo;
- delivery person deciding on schedule and route, making deliveries, completing paperwork;
- factory worker taking quality control readings, entering information on computer screen, using results to adjust machinery;
- telephone engineer fixing problem by looking up reference in manual, reading text and diagram, and checking instrument;
- loading dock attendant reading information from order request, checking inventory list, calculating weight of load, and filling out despatch form.

OR

Conduct a task analysis for an everyday task. Observation of people performing the task should be part of your analysis. In your conclusion, you should decide which aspects to concentrate on, with reasons based on needed skills, and possibly cost factors. (4-5 pages)

For example,

- filling out a tax return, including reading directions, gathering documents, and making calculations and decisions;
- devising a day's healthy meals for a special diet, taking account of food groups, calories and interest;
- using a computer information system to locate a person, service or product;
- planning a meeting, including inviting participants, agreeing a time and place, arranging accommodations, and writing an agenda.

Module 5 — Curriculum Materials

Use your own or a theoretical task analysis (taking account of its priorities for what should be taught) to design curriculum materials. These should be for three hours of class or individual instruction to teach a workplace or everyday task, or some basic skill associated with such a task. Produce the materials and describe how you would use them. (It may help to imagine that you are providing these materials for another teacher to use.) Include enough background description about the learners and what they have already been taught to set the context for these instructional materials.

For possible example tasks, see Module 4 above.

Module 6 — Supplementary Materials

Review the publicly-available materials on a workplace topic, making recommendations for the use of other teachers. These could include commercially-produced textbooks, curriculum materials entered into the ERIC database system, and materials available on the Internet. Include an annotated list of items and your judgements on their relevance, intended use, coverage of material, instructional method, reading level, and price. (4-5 pages)

Example topics:

- grammar for writing a memo or report;
- reading tables for use of labels, manuals or forms;
- cooperative exercises for developing teamwork;
- fractions for measurement;
- statistical terms and techniques for Statistical Process Control;
- reading graphs for inventory control;
- technical language for low-level readers or ESL workers.

Module 7 — Lesson plans

Use your own or a theoretical task analysis (taking account of its priorities) to plan 20 hours of instruction for some workplace area in a specific workplace context. Set out a 4-5 page overview of your plan, including objectives, materials and activities connected with your teaching. (You do not need to produce the materials—just describe what they would be.)

Example workplace areas:

- writing of safety reports for hospital workers, including filling out forms and writing clear, concise descriptions;

- Statistical Process Control, and the necessary statistical background, for machine-tool workers;
- accurate measurement, including fractions and decimals, for wood-products workers.

Module 8 — Evaluation

Develop two evaluation measures for a particular workplace situation:

- a set of 6 job-related scenario questions,
- a set of 5 employee rating scales.

Describe the workplace, the workers and the course being assessed. Explain why these evaluation measures are important for both the job and the skills taught in the course.

(Use a real workplace situation or base your evaluation on your own fictional workplace setting.)

Distance Education:
Developing Workplace Literacy Programs

Module 1 — The need for workplace literacy

What is workplace literacy?

Over the past two decades, there has been an increase in literacy programs based in workplaces. This growth is likely to continue as a result of technological changes in many workplaces, as well as organizational re-structuring which alters the nature of some jobs. In addition, some workers are forced to learn new jobs, or even find other employment in a completely different area. All of these changes mean more job-related training for workers and, for some, this will require an increase in their literacy skills.

But what are these "literacy skills"? What is workplace literacy? In fact, practitioners and researchers in this area are not in complete agreement about a definition of workplace literacy (see the article by Askov & Aderman in this module). Most would agree that literacy involves the basic skills of reading, writing and mathematics and their application to such areas as communication, teamwork and problem-solving. However, the borderline between literacy and technical job training is blurred: where does learning to use the operating manual for a new machine fit in? It is technical training in that it relates to operating the machine, but it is literacy in that lack of reading skills may interfere with understanding the manual. Thus it can be seen that, although the definition of workplace literacy is not entirely clear, it is anchored in the basic skills of reading, writing and mathematics.

So far we have considered just one role of workplace literacy—linking instruction to workplace demands. This focus, however, can sometimes run counter to another element of effective programs—taking the needs of learners into account. Learners are key stakeholders in the process and sometimes they do not agree with the goals, materials, and emphases of workplace-focused programs if those programs are thrust upon them. (See Gowen (1992) for a case study of such a situation.) This raises an issue concerning program goals: to what extent should they be workplace-centered or learner-centered? Learner-centered goals take into account learners' personal needs such as raising their level of general literacy, obtaining a GED, or helping children with homework.

In fact, most workplace literacy programs incorporate some workplace-centered and some learner-centered goals. There are several advantages to having a mix of both types of goals. Including learner-centered goals in a program can reinforce job skills with everyday skills used outside the workplace. Mikulecky, Lloyd, Horwitz, Masker and Siemantel (1996) surveyed 121 workplace literacy program reports that were entered into the ERIC database between 1990 and 1993. An examination of the stated goals of these programs indicates the extent to which they were workplace-centered or learner-centered. Nearly half the programs provided both learner-centered (i.e., general skills) and workplace-centered (i.e., job-related) program strands. The following table illustrates the breakdown of programs in the survey:

job-related skills training only	52 programs (43%)
general skills training only	15 programs (12%)
both general & job-related	54 programs (45%)

Another factor is the difference between workplace and workforce literacy programs. Increasingly, programs are being developed that are not tied to specific employers or industries but are targeted to more general workforce populations. These include any workers who need assistance with workforce readiness such as interview skills, completing applications, job search strategies, and teamwork skills. Workforce education programs typically serve entry-level workers, populations who are re-entering the workforce after an extended period of time, and redeployed (i.e., recently laid off) workers.

In summary, "workplace literacy" is a multitude of things: ranging from job-specific skills, through more general workforce skills, to enhanced education for individual learners. However, one factor is clear: as the market demands higher levels of skill to remain employed in high wage jobs, workers need to change their habits, attitudes and lifestyles to include lifelong learning. The American Society for Training and Development (Carnevale, Gainer & Meltzer, 1988) and The Secretary's Commission on Achieving Necessary Skills (U.S. Department of Labor, 1991—see extract in this module) outline the skills necessary to remain employable in an increasingly competitive job market. (See the next section for more details.) Programs are beginning to recognize and address this need for adults to continue to acquire higher-level skills, by combining general instruction with job-specific instruction.

New skill demands and actual worker skills

Changing economic conditions in the U.S., influenced by changes in the global economy, are causing profound alterations in the nature of work. There are now fewer and fewer repetitive and routine jobs, and those are becoming steadily worse paid. This is affecting manufacturing industry particularly: multi-national corporations can conduct their business anywhere in the world and choose the locations of their factories by comparing wage levels with productivity. Routine processes are increasingly being carried out in third-world countries at very low wages, whereas a living wage in a developed country can be earned only through the higher productivity that goes with greater skills. Such factors are also beginning to affect service industries, particularly those that do not involve face-to-face customer contact (Reich (1992). (See also the Handbook, pp. 6-9.)

Because of these changes in the workplace, the demands made on the literacy skills of workers are increasing all the time. Even jobs such as laborer and machine operative require substantial amounts of reading and writing. More and more organizations now require a flexible workforce capable of performing a variety of different tasks, and often of deciding for themselves what today's tasks will be. As part of teamwork, planning and quality control, workers need to be able to solve problems which often involve the application of literacy skills. These may well include reading procedure manuals, taking minutes at team meetings, and making judgments about changing machine settings.

The complexity of modern jobs is well illustrated by the seven skill groups desired by employers, as described by the American Society for Training and Development (Carnevale, Gainer & Meltzer, 1988). These are:

- learning to learn;
- reading, writing, computation;
- oral communication;
- creative thinking, problem solving;
- self-esteem, goal-setting, motivation, personal & career development;

- interpersonal & negotiation skills, teamwork;
- organizational effectiveness, leadership.

Note that the traditional 3 R's form only a small part of this wish list. Much more prominent are issues related to creativity, motivation, communication and teamwork: broad areas which will incorporate a variety of skills and competencies.

More recently, the U.S. Department of Labor (1991, 1992) has established a comparable set of skills guidelines as part of the Secretary's Commission on Achieving Necessary Skills (SCANS). (See extract in this module.) In addition to basic reading, writing and computation, the Commission reports the need for increased competency in the areas of:

- Resources—identifies, organizes, plans and allocates resources;
- Interpersonal—works with others on teams, teaches others, serves clients, exercises leadership, negotiates, and works with diversity;
- Information—acquires, organizes, interprets, evaluates and communicates information;
- Systems—understands complex inter-relationships and can distinguish trends, predict impacts, as well as monitor and correct performance;
- Technology—works with a variety of technologies and can choose appropriate tool for task.

Again, the emphasis is on integration of skills, working in a team and self-motivation. Literacy demands will form part of this mix, but they will not be required in isolation.

These are the likely requirements of most jobs in the future. Let us now compare them with actual worker skills. A recent survey of adult literacy gave a nation-wide sample of adults a selection of realistic tasks involving applications of basic skills. This National Adult Literacy Survey (Kirsch, Jungeblut, Jenkins & Kolstad, 1993—see extract in this module and the Handbook, pp. 10-11) shows that about 50% of adults perform at the lower two of five literacy levels reported by the survey. Many of these adults are in jobs that are changing rapidly to require the integration of skills described above. These higher skill requirements correspond to tasks at Levels 3, 4 and 5 of the survey, so that many workers will find increasing difficulty in carrying out their jobs in the future.

This is the challenge for workplace literacy educators: to help workers bridge the gap between their present skills and those skills they need to perform well in their changing jobs—or their completely new jobs.

Now read the articles and extracts in this module:

- Askov, E. N., & Aderman, B. (1991). "Understanding the history and definitions of workplace literacy."
- U.S. Department of Labor. (1991). *What work requires of schools: A SCANS report for America 2000.*

- Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). ***Adult literacy in America: A first look at the results of the National Adult Literacy Survey.***

Read also Chapter 1 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). Then use the information contained in those readings to write your response paper for Module 1.

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List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 1 — The need for workplace literacy

Askov, E. N., & Aderman, B. (1991). "Understanding the history and definitions of workplace literacy." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc. (ERIC Document Reproduction Service No. ED 333 180)

pp. 7-20.

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). *Adult literacy in America: A first look at the results of the National Adult Literacy Survey*. Washington, DC: National Center for Educational Statistics. (ERIC Document Reproduction Service No. ED 358 375)

Title page, Executive Summary (pp. xiii-xxi) and Introduction (pp. 1-13)

U.S. Department of Labor. (1991). *What work requires of schools: A SCANS report for America 2000*. Washington, DC: author. (ERIC Document Reproduction Service No. ED 332 054)

Title page, Executive Summary (pp. xv-xxii) and Chapter 1 (pp. 1-6)

From: What Work Requires of Schools — A SCANS Report for America 2000 ★ (U.S. Department of Labor, 1991)

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EXECUTIVE SUMMARY

The Secretary's Commission on Achieving Necessary Skills (SCANS) was asked to examine the demands of the workplace and whether our young people are capable of meeting those demands.

Specifically, the Commission was directed to advise the Secretary on the level of skills required to enter employment. In carrying out this charge, the Commission was asked to:

- Define the skills needed for employment;
- Propose acceptable levels of proficiency;
- Suggest effective ways to assess proficiency; and
- Develop a dissemination strategy for the nation's schools, businesses, and homes.

This report results from our discussions and meetings with business owners, public employers, unions, and workers and supervisors in shops, plants, and stores. It builds on the work of six special panels we established to examine all manner of jobs from manufacturing to government employment. We also commissioned researchers to conduct lengthy interviews with workers in a wide range of jobs.

The message to us was universal: good jobs will increasingly depend on people who can put knowledge to work. What we found was disturbing: more than half our young people leave school without the knowledge or foundation required to find and hold a good job. These young people will pay a very high price. They face the bleak prospects of dead-end work interrupted only by periods of unemployment.

Two conditions that arose in the last quarter of the 20th Century have changed the terms for our young people's entry into the world of work: the globalization of commerce and industry and the explosive growth of technology on the job. These developments have barely been reflected in how we prepare young people for work or in how many of our workplaces are organized. Schools need to do a better job and so do employers. Students and workers must work smarter. Unless they do, neither our schools, our students, nor our businesses can prosper.

SCANS research verifies that what we call *workplace know-how* defines effective job performance today. This know-how has two elements: *competencies* and a *foundation*. This report identifies five competencies and a three-part foundation of skills and personal qualities that lie at the heart of job-performance. (See pages xvii and xviii.) These eight requirements are essential preparation for all students, both those going directly to work and those planning further education. Thus, the competencies and the foundation should be taught and understood in an integrated fashion that reflects the workplace *contexts* in which they are applied.

We believe, after examining the findings of cognitive science, that the most effective way of learning skills is "in context," placing learning objectives within a real environment rather than insisting that students first learn in the abstract what they will be expected to apply.

The five SCANS competencies span the chasm between school and the workplace. Because

they are needed in workplaces dedicated to excellence, they are hallmarks of today's expert worker. And they lie behind the quality of every product and service offered on today's market.

The competencies differ from a person's technical knowledge. For example, both accountants and engineers manage resources, information, systems, and technology. They require competence in these areas even though building a bridge has little to do with balancing a set of books. But in each profession, the competencies are at least as important as technical expertise. The members of the Commission believe these competencies are applicable from the shop floor to the executive suite. In the broadest sense, the competencies represent the attributes that today's high-performance employer seeks in tomorrow's employee.

To describe how this know-how is used on the job, our report provides a series of five scenarios that portray work requirements in the context of the real world. The scenarios show that work involves a complex interplay among the five competencies we have identified and the three elements of the foundation—the **basic skills**, higher order **thinking skills**, and diligent application of **personal qualities.**

The scenarios make clear that tomorrow's career ladders require even the basic skills—the old 3 Rs—to take on a new meaning. First, all employees will have to **read** well enough to understand and interpret diagrams, directories, correspondence, manuals, records, charts, graphs, tables, and specifications. Without the ability to read a diverse set of materials, workers cannot locate the descriptive and quantitative information needed to make decisions or to recommend courses of action. What do these reading requirements mean on the job? They might involve:

- interpreting blueprints and materials catalogues;
- dealing with letters and written policy on complaints;
- reading patients' medical records and medication instructions; and
- reading the text of technical manuals from equipment vendors.

At the same time, most jobs will call for **writing skills** to prepare correspondence, instructions, charts, graphs, and proposals, in order to make requests, explain, illustrate, and convince. On the job this might require:

- writing memoranda to justify resources or explain plans;
- preparing instructions for operating simple machines;
- developing a narrative to explain graphs or tables; and
- drafting suggested modifications in company procedures.

Mathematics and **computational skills** will also be essential. Virtually all employees will be required to maintain records, estimate results, use spreadsheets, or apply statistical process controls as they negotiate, identify trends, or suggest new courses of action. Most of us will not leave our mathematics behind us in school. Instead, we will find ourselves using it on the job, for example, to:

- reconcile differences between inventory and financial records;

FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. *Time*—Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. *Money*—Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. *Material and Facilities*—Acquires, stores, allocates, and uses materials or space efficiently
D. *Human Resources*—Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. *Participates as Member of a Team*—contributes to group effort
B. *Teaches Others New Skills*
C. *Serves Clients/Customers*—works to satisfy customers' expectations
D. *Exercises Leadership*—communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. *Negotiates*—works toward agreements involving exchange of resources, resolves divergent interests
F. *Works with Diversity*—works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. *Acquires and Evaluates Information*
B. *Organizes and Maintains Information*
C. *Interprets and Communicates Information*
D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

A. *Understands Systems*—knows how social, organizational, and technological systems work and operates effectively with them
B. *Monitors and Corrects Performance*—distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
C. *Improves or Designs Systems*—suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. *Selects Technology*—chooses procedures, tools or equipment including computers and related technologies
B. *Applies Technology to Task*—Understands overall intent and proper procedures for setup and operation of equipment
C. *Maintains and Troubleshoots Equipment*—Prevents, identifies, or solves problems with equipment, including computers and other technologies

- estimate discounts on the spot while negotiating sales;
- use spreadsheet programs to monitor expenditures;
- employ statistical process control procedures to check quality; and
- project resource needs over the next planning period.

Finally, very few of us will work totally by ourselves. More and more, work involves listening carefully to clients and co-workers and clearly articulating one's own point of view. Today's

A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. *Reading*—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules

B. *Writing*—communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts

C. *Arithmetic/Mathematics*—performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques

D. *Listening*—receives, attends to, interprets, and responds to verbal messages and other cues

E. *Speaking*—organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

A. *Creative Thinking*—generates new ideas

B. *Decision Making*—specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative

C. *Problem Solving*—recognizes problems and devises and implements plan of action

D. *Seeing Things in the Mind's Eye*—organizes, and processes symbols, pictures, graphs, objects, and other information

E. *Knowing How to Learn*—uses efficient learning techniques to acquire and apply new knowledge and skills

F. *Reasoning*—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. *Responsibility*—exerts a high level of effort and perseveres towards goal attainment

B. *Self-Esteem*—believes in own self-worth and maintains a positive view of self

C. *Sociability*—demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings

D. *Self-Management*—assesses self accurately, sets personal goals, monitors progress, and exhibits self-control

E. *Integrity/Honesty*—chooses ethical courses of action

worker has to **listen** and **speak** well enough to explain schedules and procedures, communicate with customers, work in teams, understand customer concerns, describe complex systems and procedures, probe for hidden meanings, teach others, and solve problems. On the job, these skills may translate readily into:

- training new workers or explaining new schedules to a work team;
- describing plans to supervisors or clients;
- questioning customers to diagnose malfunctions; and
- answering questions from customers about post-sales service.

SCANS estimates that less than half of all young adults have achieved these reading and writing minimums; even fewer can handle the mathematics; and, schools today only indirectly address listening and speaking skills.

Defining the minimum levels of proficiency in the SCANS competencies is also a crucial part of the Commission's task. It requires judgments about the learning possible in yet-to-be designed schools. It also requires imagining what the workplaces of the year 2000 could and should look like.

Our work on these required levels of proficiency is not complete. We have examined less than a third of the jobs we intend to research. We also wish to hear what others think of our initial efforts. The insert at the top of page xx is illustrative of our initial estimates of work-ready levels of proficiency in the five competencies. Proficiency in each competency requires proficiency in the foundation. The contexts displayed come from more extensive scenarios contained in our report. The point we wish to make is that young people leaving school should have both a sufficient foundation and level of understanding of the competencies to exhibit performances like those illustrated.

The minimums we propose will define what makes a young person ready for work at entry levels on career ladders. They represent neither the first nor last step in a process of life-long learning. Instead, the minimums will be a second step in a progression of skills acquisition. For example, consider scheduling time, part of the SCANS **resources** competency. A young student (at the preparatory stage) might be expected to make a schedule for him or herself. Being *work-ready* would require making a schedule for others. At the extreme, a specialist might develop schedules for an airline. (See insert at bottom of page xx.)

In September 1989 President Bush and the nation's governors agreed to six national goals in education to be achieved by the year 2000. By April 1991 a four-part strategy to attain these six goals was announced by President Bush and Secretary of Education Lamar Alexander. This report of the Secretary of Labor's Commission on Achieving Necessary Skills speaks directly to those goals and to that strategy. It defines what our young people must know and be able to do in order to hold a decent job and earn a decent living.

Our work pertains directly to National Goals #3 and #5 which state:

Goal #3 American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English,

★

KNOW-HOW:
WORK-READY LEVEL OF PROFICIENCY

COMPETENCE	EXAMPLE OF LEVEL
RESOURCES	Develop cost estimates and write proposals to justify the expense of replacing kitchen equipment. Develop schedule for equipment delivery to avoid closing restaurant. Read construction blueprints and manufacturers' installation requirements to place and install equipment in the kitchen.*
INTERPERSONAL	Participate in team training and problem-solving session with multicultural staff of waiters and waitresses. Focus on upcoming Saturday night when local club has reserved restaurant after midnight for party. Three people cannot work and team has to address the staffing problem and prepare for handling possible complaints about prices, food quality, or service.*
INFORMATION	Analyze statistical control charts to monitor error rate. Develop, with other team members, a way to bring performance in production line up to that of best practice in competing plants.**
SYSTEMS	As part of information analysis above, analyze painting system and suggest how improvements can be made to minimize system downtime and improve paint finish.**
TECHNOLOGY	Evaluate three new paint spray guns from the point of view of costs, health and safety, and speed. Vendors describe performance with charts and written specifications. Call vendors' representatives to clarify claims and seek the names of others using their equipment. Call and interview references before preparing a report on the spray guns and making a presentation to management.**

PROGRESS IN ACQUIRING SKILLS

PROFICIENCY LEVEL	PERFORMANCE BENCHMARK
PREPARATORY	Scheduling oneself
WORK-READY	Scheduling small work team
INTERMEDIATE	Scheduling a production line or substantial construction project
ADVANCED	Developing roll-out schedule for new product or production plant
SPECIALIST	Develop algorithm for scheduling airline

*Competence as demonstrated in a service sector application.
**Competence as demonstrated in a manufacturing sector application

mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and *productive employment in our modern economy.* (emphasis added)

Goal #5 Every adult American will be literate and will *possess the knowledge and skills necessary to compete in a global economy* and exercise the rights and responsibilities of citizenship. (emphasis added)

Our report is intended to contribute to all four parts of the strategy put forth by President Bush in AMERICA 2000 as shown below.

Workforce know-how will be part of the new World Class Standards. However, defining competencies and a foundation is not enough. Schools must teach them. Students must learn them. And, they should be assessed as part of the AMERICA 2000 agenda. Our work on these issues will continue over the coming months. Among the concrete steps SCANS will take in the future are efforts to:

- examine how to create an assessment system that helps students understand what they have to learn and certifies that they have mastered the competencies so that employers and colleges will honor their record of high school performance;
- consider the implications of the SCANS findings for curriculum development, school organization, teacher training, and instructional materials and technology; and
- help the Administration establish the public-private partnership called for in the education strategy, "AMERICA 2000."

The President of the United States has encouraged all of us to become revolutionaries in the cause of education. For over 200 years

EXCERPTS FROM AMERICA 2000's FOUR-PART STRATEGY[1]

Part 1.

"For Today's Students: Better and More Accountable Schools—World Class Standards:. . . . These standards will incorporate both knowledge and skills, to ensure that, when they leave school, young Americans are prepared for further study and the work force."

Part 2.

"For Tomorrow's Students: A New Generation of American Schools. New American Schools: help communities create schools that will reach the national education goals, including World Class Standards."

Part 3.

"For the Rest of Us (Yesterday's Students/Today's Work Force): A Nation of Students—Private-Sector Skills and Standards: Business and labor will be asked...to establish job-related skill standards, built around core proficiencies...."

Part 4.

"Communities Where Learning Can Happen." AMERICA 2000 Communities. The president is challenging every city, town, and neighborhood... to adopt the six national education goals...[and] develop a report card for measuring progress."

[1]The White House, April 18, 1991.

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Americans have worked to make education part of their national vision, indispensable to democracy and to individual freedom. For at least the last 40 years, we have worked to further the ideal of equity—for minority Americans, for the disabled, and for immigrants. With that work still incomplete, we are called to still another revolution—to create an entire people trained to think and equipped with the know-how to make their knowledge productive.

This new revolution is no less exciting or challenging than those we have already completed. Nor is its outcome more certain. All that is certain is that we must begin.

I.
HIGH-PERFORMANCE WORK AND SCHOOLS

On April 18, 1991, when the President of the United States announced a new education strategy, "AMERICA 2000," he said, "Think about every problem, every challenge, we face. The solution to each starts with education. For the sake of the future of our children and the nation, we must transform America's schools. The days of the status quo are over."

We understand that schools do more than simply prepare people to make a living. They prepare people to live full lives—to participate in their communities, to raise families, to enjoy the leisure that is the fruit of their labor. A solid education is its own reward and has value beyond specific skills.

This report concerns one part of the transformation the President has described, the part that involves how our schools prepare our young people for work. It does not deal with other, equally important, concerns that are also the proper responsibility of our educators, such as providing comprehensive instruction in history, literature, geography, and theoretical science and mathematics so our young people can live the full lives we wish for them. Competency in these five core subjects remains relevant to the "real world." This report should not be misconstrued as suggesting that schools abandon these subjects in favor of workplace skills training.

This document describes fundamental changes in the nature of work, and the implications those changes hold for the kinds of workers and workplaces the nation must create. It defines "workplace know-how"—a quality that workers must possess if they are to grow, produce, and succeed. It is about changes in how we should think about the connections between education and earning a living. This report is about helping our youth enter the workforce prepared with the know-how they need to master whatever challenges work and life will place before them.

THE WORLD HAS CHANGED

A strong back, the willingness to work, and a high school diploma were once all that was needed to make a start in America. They are no longer. A well-developed mind, a passion to learn, and the ability to put knowledge to work are the new keys to the future of our young people, the success of our businesses, and the economic well-being of the nation.

Two events of the last generation serve as metaphors for how radically and irreversibly the economic environment for all work has changed, both for Americans and for the rest of the world. In 1973, the OPEC oil embargo made it unmistakably clear that our nation's economic future was no longer ours alone to decide. Since then, the lessons of globalization and interdependence have been reinforced at every turn. In many ways, 1973 was a boundary line defining new territory.

Two years later, the first plans for an unheard of new product—a personal computer—appeared in a popular scientific magazine. That device has altered both the speed with which work is done and its very nature. It has reconfigured the world of work as have perhaps no other inventions since electricity or the assembly line. It has created not only a new industry; it has redefined the way thousands of different kinds of work are now carried out.

Globalization and technology contain both threat and promise. The threat is easily summarized in the economic implications of energy dependence, disappointing productivity growth, and stagnant wages. For example:

- **Productivity.** Productivity growth (output per hour) in the United States slowed significantly after 1973. Labor productivity actually declined in 1989 and 1990. Some estimate that if current international productivity trends continue, nine countries may exceed the U.S. in output per worker-hour by the year 2020.
- **Earnings and Income.** Stagnant productivity has seriously affected workers' earnings. Median family income increased nearly three percent a year between 1947 and 1973. Since 1973, it has scarcely increased at all. Families with heads of households under the age of 34 have watched their real income decline since 1979.
- **Jobs.** Job opportunities in the United States are changing. Twenty years ago, manufacturing accounted for 27 percent of all nonagricultural employment in the U.S.; services and retail trade for 32 percent. By 1990, manufacturing accounted for only 17 percent of these jobs, while services and retail trade made up 44 percent. In 1990, manufacturing jobs paid an average of $10.84 per hour; while service jobs paid $9.86 and jobs in retail trade paid only $6.78.

But the promise of an internationalized economic environment and a workplace grounded in new technologies is equally dramatic. The promise is a healthy economy that improves the standard of living for all by growing—by increasing productivity, creating new jobs, and meeting the challenges placed before it.

WORK IS CHANGING

To paraphrase futurist Alvin Toffler, we are now caught up in a "third wave" of industrialization. Just as the United States powered its early industrial growth with steam and built a manufacturing empire on the assembly line, it can now catch the crest of computer technology to create a high-wage, high-skill future.

That future depends on high-performance work organizations and a highly competent workforce. It will be as different from our present as today's most advanced work and workplace are different from Henry Ford's assembly line. As a corporate member of the commission observed, in reviewing preliminary descriptions of the workplace developed during this project, "What startles me about these descriptions is the realization that they are accurate, but ten years ago I could not possibly have imagined them. What concerns me is this lack of imagination. What will our workplace look like ten years from today?"

Figure A on the following page, adapted from a chart developed by the Congressional Office of Technology Assessment, summarizes the major differences between the traditional workplace and the leading-edge, high-performance work-

places that are beginning to develop. These differences were also found by the MIT Commission on Industrial Productivity that reported in 1989. The members of SCANS believe these new workplaces should become the norm, not the exception.

In most workplaces of today, work is routinized, repetitive, and organized along hierarchical lines. Perhaps its most prominent feature is that it emphasizes mass production by workers who are not asked to think about what they are doing. It leaves quality to be inspected into the product after-the-fact, i.e., by weeding out defects through a separate quality control process.

High performance workplaces, by contrast, stand as a model for a successful future. In this new environment, work is problem-oriented, flexible, and organized in teams; labor is not a cost but an investment. Most important, the high-performance organization recognizes that producing a defective product costs more than producing a high-quality one. The solution: design quality into the product development proc-

FIGURE A

CHARACTERISTICS OF TODAY'S AND TOMORROW'S WORKPLACE[1]

TRADITIONAL MODEL	HIGH PERFORMANCE MODEL
STRATEGY	
• mass production	• flexible production
• long production runs	• customized production
• centralized control	• decentralized control
PRODUCTION	
• fixed automation	• flexible automation
• end-of-line quality control	• on-line quality control
• fragmentation of tasks	• work teams, multi-skilled workers
• authority vested in supervisor	• authority delegated to worker
HIRING AND HUMAN RESOURCES	
• labor-management confrontation	• labor-management cooperation
• minimal qualifications accepted	• screening for basic skills abilities
• workers as a cost	• workforce as an investment
JOB LADDERS	
• internal labor market	• limited internal labor market
• advancement by seniority	• advancement by certified skills
TRAINING	
• minimal for production workers	• training sessions for everyone
• specialized for craft workers	• broader skills sought

[1]Source: "Competing in the New International Economy." Washington: Office of Technology Assessment, 1990.

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ess itself, particularly by enabling workers to make on-the-spot decisions.

Workplaces organized along the lines of the traditional mass production model can no longer prosper. Like the dinosaur with its limited intelligence, doomed to extinction at the hands of smaller but craftier animals, the traditional model cannot survive the competition from high-performance organizations that depend on the intelligence and ingenuity of their managers and employees. High-performance organizations are relentlessly committed to excellence, to product quality, and to customer service. These are the organizations that have revived American manufacturing competitiveness and compete for the nation's mark of business distinction—the Department of Commerce's Baldrige Award. One of the defining characteristics of these firms is a workforce with the skills outlined in this document.

THE EDUCATIONAL SIDE OF THE EQUATION

The world has changed. Work is changing. But despite their best efforts, most schools have not changed fast enough or moved far enough. For nearly a decade, education reform and its relationship to America's place in the world have been high on the public's agenda. Reports have been developed, meetings convened, and announcements and calls to arms issued. Literally hundreds of specific recommendations have been put forward by researchers, public leaders, opinion molders, and school officials.

Many educators have responded. Most communities in the United States have felt the impact: new curricula, adult literacy efforts, compensatory programs, in-school child care, new teacher training efforts—all of these and more have been tried. Yet, despite some promising exceptions, we are unable to demonstrate that things are, on the whole, much better. In terms of achieving results, not much has changed despite great effort and significant increases in funding.

It is time to ask: Why is that so? How is it that all this time, energy, and effort have been expended to so little avail? The problem is complex and so are the answers. Part of the difficulty is that employers and school personnel are passing each other like ships in the night: one speaks in Morse code, the other signals with flags. As a consequence of the miscommunication, secondary school students often see little connection between what they do in school and how they expect to make a living. They, therefore, invest very little effort in their education. The average American high school junior puts in half of the 60 hours a week that a Japanese peer devotes to schoolwork.

Miscommunication

One reason for the lack of educational improvement lies in the confusing signals exchanged between the education and the business communities. The educator asks, "What do you want in our graduates? We are confident we can produce it." The response is, too frequently, a set of contradictory cues.

- The local tour bus operator responds, "I want graduates who can diagnose and repair diesel engines and who know something about air brakes. That's my first priority. I don't have time to train these kids."
- The local bank vice president says, "I want clean and attractively dressed young people, with a solid grasp of the basics—reading, writing, and computation—and we will teach them the banking business."

- The owner of a small manufacturing firm asks for dependable, reliable graduates who will show up on time with enough technological skill to immediately step into the CAD-CAM (Computer-Assisted Design and Computer-Assisted Manufacturing) operation.

Researchers' efforts have proven equally unhelpful. Most attempts to characterize work skills focus either on general human characteristics (e.g., intelligence, reasoning ability, reaction time) or on the characteristics of specific jobs (e.g., ability to assemble items or route packages). The level of detail communicated varies from the very general (ability to solve problems) to the very specific (perform a tack weld on sheet metal). As a result, the operational implications and meaning of these lists are frequently difficult to determine. They do not provide direct links to the "stuff" of schools or a sense of the work enabled by the skills identified.

Frustrated, the school finds that the business world has not defined what schools should be doing. To the extent that individual business leaders are clear, they often convey an unrealistic expectation that schools serve as their firm's training institution with their specific training requirements at the front of the line.

The results are predictable. Despite sincere, well-intentioned efforts to respond, the schools—lacking clear and consistent guidance—continue with the system and methodologies they inherited from a system designed nearly 100 years ago for the needs of business organizations that are now quite different.

The Student

The disjointed conversation between the schools and employers creates a situation in which students understand intuitively, often correctly, that what they are doing in school today bears little resemblance to what they will be expected to do in the workplace tomorrow. Many students, both those expecting to go to work immediately after 12th grade and those going to most colleges, simply do not consider high school work as worth serious effort.

The sense that students clearly distinguish between what goes on in their classrooms and what goes on in the "real world" was palpable in focus groups convened as part of the SCANS research. Not one of the students in these groups believe that a high school diploma by itself guarantees a job in today's economy. All of them, in fact—whether bound for college or work—believe that job skills, by and large, are learned on the job, by hands-on experience, through extracurricular activities, or by osmosis. In other words, they believe that the skills needed in the real world are, in the words of one student, just "picked up."

But the massive training budgets of today's corporations are powerful evidence that workforce know-how cannot be simply "picked up." When students fail to associate "school" work with "real" work, they draw the wrong conclusion—that "school" work is not "real." In fact, however, the task of learning is the real work of today, whether at school, in the university, on the job, or in the White House. It is this task young people must master in every environment.

THE CHALLENGE

The challenge this situation places before the nation's business and educational communities is three-fold. The first task is to develop a better means of communicating, a common vocabulary to guide the conversation between

the business and school communities. The following chapter suggests such a vocabulary. The second task is to set clear-cut standards and then convince students that effort invested in meeting these standards today will be rewarded in the world of work tomorrow. A major part of this task involves persuading students, teachers, parents, and business leaders that workplace know-how is not something "you just pick up." It can be defined. It should be taught. It must be learned. The third task is to assess and certify students' workplace readiness so that students, their parents, and employers will know where they stand.

Distance Education:
Developing Workplace Literacy Programs

Module 2 — Planning Issues

Workplace liaison

The main difference between workplace education and most other forms of adult education is the number and variety of people that a program provider needs to work with. These include company managers, union or other employee representatives, supervisors—and the workers for whom the program is being provided. Also unusual is that most of these people will know little about teaching when a program is first being started. It is a learning process for both program provider and program recipient: the provider must learn about the company's operation and the recipient must learn how education can help their business.

It is therefore important for all these stakeholders in the program's success to work together on developing the right program for the situation, and agreeing on just what that situation is. A good way to achieve this working together is to form a planning committee consisting of representatives from all the stakeholder groups, which meets regularly during the development of the program. This will allow all parties to explain their position on issues that arise, ask questions of the other stakeholders, and maintain cooperation and communication during the early phases of a program's life. (For more on this issue, see the Handbook and the articles by Lewe and Jurmo in the module.)

Setting reasonable goals

In these discussions, a program provider needs to have a clear idea of which program choices will be beneficial and which may be counter-productive. One area of possible conflict concerns the time available for classes, particularly if they are held on company time. Not surprisingly, company representatives will want many goals to be reached in the minimum amount of time. However, the educator's role here is to point out just what can be reasonably achieved in various possible situations, to ensure that the needs of learners, employers and other stakeholders are addressed. Setting realistic, achievable goals can have a positive impact on a workplace literacy program, and this process is also essential to keep the program in focus.

Two of the factors that a program provider may need to discuss with the planning committee are learner practice time and lack of transfer. Research has shown that skills not practiced soon disappear and that most learners have difficulty transferring skills from one context to another (e.g., Sticht, 1982). A recent study of several workplace literacy classes (Mikulecky & Lloyd, 1996) indicates strong connections between, for example,

- class time spent reading and writing with workplace materials and learner gains in job-related reading abilities, and
- class discussions of learners' beliefs and plans about literacy and learner gains in beliefs about literacy effectiveness and plans concerning education.

These results emphasize the need for workplace classes to focus on skills and materials clearly related to program goals. As each class is developed, goals should be written that are achievable in 20-50 hours of instructional time. Establishing goals that are too general in nature will make it difficult to achieve them in a reasonable amount of instructional time.

For job-related courses, it is also important to relate goals to job tasks and job simulation exercises that are used as part of the instruction. Doing so will create a stronger link between instruction and jobs. A program provider may have to repeat this message several times before all other stakeholders are convinced that any general kind of literacy instruction is not the answer to their very specific literacy needs.

In addition, those needs are unlikely to be uniform. In any workplace, there will probably be a variety of worker educational needs, requiring a number of different solutions. For example, some workers in a company may speak English as a second language. Their literacy requirements will be very different from those of native speakers who just need a brush-up on technical terms to read a manual. Union representatives may want a GED preparation course, while management wants job-related instruction. This variety of needs can be catered for by planning a multiple-strand program, which includes a variety of courses to fit the range of interests among the stakeholders. Another advantage of a multiple-strand approach is that workers can attend a succession of classes as they develop new abilities, confidence and interests, leading toward a long-term commitment to education.

To increase the long-term effectiveness of the program, the planning committee should work together to establish goals. The committee can make decisions such as determining what resources are available, deciding which groups of workers to target first for instruction, gathering information, and developing learning goals for each program strand. Establishing a planning group provides the advantage of getting all stakeholders actively involved in guiding the direction of the program from the earliest stages, thus encouraging them to buy into the program.

Besides establishing program goals, it is also advisable to meet with learners individually to agree on realistic personal goals. As with program goals, these individual educational plans should relate to the curriculum being taught and to jobs. However, individual goals should also take into account the learner's personal interests (e.g., managing finances, time management, personal computer skills). The plans should be reviewed periodically with each learner to assure that appropriate progress is being made and that goals remain relevant to the learner's needs. If necessary, plans should be modified to match progress and any changes in the learner's situation. Setting realistic, personalized goals will help learners recognize that they are making progress. Thus, they are more likely to buy into the program and remain enrolled for several strands of instruction.

To summarize, it is important to set up a planning committee consisting of representatives from all the various stakeholders. The committee should set realistic goals early in the planning process to keep the program on track. Learning goals should also be developed that relate to instruction and jobs and are achievable in the time available for each program strand. Learners should work with instructors to set individual goals, and these goals should be reviewed periodically to ensure that progress is being made. Setting group and personal goals will encourage learners and other stakeholders to buy into the program, increasing its chances for success.

Recruitment of learners and instructors

Another very important factor in program success is worker recruitment—a program cannot be successful if workers do not come to the classes. A program provider, particularly one coming from outside the organization, will need the assistance of many people in the company to inform workers of the program and its potential benefits. The members of the planning group can form a nucleus of recruiters, as they come from a variety of positions in the company. But it will be very helpful to gain support from the

supervisors of the employees targeted for the first classes, because these supervisors are in contact with their small group of workers on a daily basis. Also, workers seeing and hearing their supervisors support the program will be more likely to investigate its benefits.

An incentive plan that is tied to goal achievement will also aid in recruitment and retention. Often these incentives are monetary, such as cash or savings bonds, usually for completing a job-related class successfully, advancing a certain number of levels on a standardized test, or for obtaining the GED. However, once the program has started, the greatest incentive for learner recruitment and retention is the effectiveness of the classes. Positive comments about the program from workers who are already participating is the best publicity for spreading the word and expanding the program.

In these early stages of any program, therefore, the best ambassadors for the program are the class instructors. They are the program to most learners, and so it is very important that a program's instructors are carefully chosen and then well trained in the nature of workplace literacy and in the culture of the particular workplace. At this time of expanding workplace programs, many educators are coming new to this area and will need help, for example, with developing and teaching job-related custom-designed curriculum. The Handbook that is the text for this course can be a useful tool in assisting new workplace instructors learn how to carry out the unfamiliar tasks they will face in the workplace environment.

Program types

Research and suggestions made above clearly indicate that the most effective workplace literacy programs integrate several different strands and types of instruction. This addresses the needs of the several different learner populations present in the workplace and workforce. Multiple strands also make it possible for learners to move from course to course, acquiring the hundreds of hours of practice needed for substantial literacy gains.

However, few program developers are able to begin with large-scale, integrated programs. Limited time, resources and trust often constrain beginning choices. Most programs begin with a single course or service and gradually expand course offerings and integration of services. Such productive growth is much more likely if program developers have a vision of the integrated program they hope one day to operate.

The descriptions below provide some examples of simple beginning programs, more complex mid-level programs, and fully integrated multi-strand programs. These examples are meant to be helpful, but should not be seen as a road map. The most effective programs always build on local strengths to address local needs. Modifying good ideas makes sense, but simply importing them usually does not. Therefore, the examples given below should not be seen as the only way to proceed, but rather as a source of ideas for developing an effective workplace literacy program.

Single Service Beginnings

Many programs begin by responding to a single literacy need in a particular workplace, and developing a short course to address that need for a small group of workers. This first step may be in a large or small company, or for a local agency such as a chamber of commerce, employment office or literacy council. In any case, an important factor to consider at the start is the establishing of trust between the program provider and the organization being served. If this initial course is to grow into a successful multi-strand program, providers should consult fully with all those involved and discuss openly just what this small beginning program is able to achieve. Setting over-ambitious goals is a recipe for failure, and probably the termination of the relationship. However, if all parties

appreciate that a program with limited time and resources can reach only a few clearly-defined goals, then this small beginning program may well lead on to greater things.

Possible starting points for single service programs include developing a short custom-designed course to solve a job-related problem for a particular workplace, providing a class in oral English for ESL workers, or setting up a tutoring scheme to raise the literacy level of workers having difficulty reading workplace materials. In all cases, establishing trust between provider and company by delivering initial promises will allow the providers to offer more strands to a wider range of workers as the program develops.

Mid-level Literacy Programs

Mid-level literacy programs offer more strands than a single service beginning program, but are not as extensive as a complete multi-strand program. These programs have more resources, and expend them on additional strands that meet the specific needs of workers and employers. These incorporate literacy instruction that uses a mix of off-the-shelf and custom-designed materials based on analysis of job tasks. For example, custom-designed materials might be developed to teach workers job-related writing skills, but some workbook materials could still be used for additional practice, and also for more general program strands such as a GED preparation course.

In addition, mid-level programs often involve learners in decision-making about material to be taught. This involvement includes offering strands that workers want, such as instruction in helping children with homework, if that is requested. Learners can also participate in more extensive incentive programs. For example, a program might offer monetary incentives such as payment for completing a goal and paid time off to attend classes. Besides addressing learners' personal needs and providing incentive packages, learner involvement can also extend to include assisting with analysis of job literacy tasks.

Mid-level literacy programs have a number of advantages over single service beginning programs. By offering several strands and involving learners in decision-making about what should be taught, these programs can obtain greater learner buy-in, thereby increasing enrollment and retention. The use of more custom-designed curriculum also creates a stronger link between instruction and day-to-day job responsibilities. In addition, assessment is usually more extensive, providing greater evidence of a program's success in increasing learners' ability and productivity.

Fully Integrated Programs

As indicated earlier, fully integrated literacy programs offer the greatest chance for learners to improve their lives by developing increased literacy skills. These programs also offer the best opportunity for workplaces to enhance productivity and increase the effectiveness of their existing technical training programs. Fully integrated programs use multiple strands to address learner and workplace needs, and to provide continuing educational experiences. They make extensive use of custom-designed instruction based on analysis of critical job tasks. Learners are involved in decision-making from the earliest stages of program planning and they participate actively in analyzing literacy-related job tasks.

Fully integrated programs also make extensive use of job-related reading and writing activities, and discussion of job processes. In conjunction with this workplace-centered approach, such programs also provide learner-centered instruction in the form of GED and ESL courses, and general interest strands related to hobbies, retirement, and financial planning. Learners are actively involved in developing these strands from the outset. In addition, fully integrated programs conduct thorough evaluations to measure their success in achieving learning gains and increases in productivity.

Although fully integrated programs require a long-term commitment and considerable development, they provide the greatest benefit to employers and employees. Extensive use of custom-designed curriculum can enhance the link from instruction to job tasks, contributing to worker productivity. Such instructional methods can also increase practice time as skills are used on the job, and this type of curriculum can make technical training more effective as learners are better prepared before they take such training.

The greatest benefit of full multi-strand workplace literacy programs is that they offer opportunities for learners to advance from one strand to another, eventually to high-level technical training or college courses. These programs can assist employers by reducing turnover and increasing the promotability of their existing workforce. Employees can also upgrade their skills and gradually increase their quality of life as they advance from lower-level general literacy strands to job-related literacy education, to advanced technical training or higher education. As they advance in lifelong learning, their income and standard of living also increase. Thus, employers and workers can both obtain maximum benefit from these fully integrated programs.

Now read the articles and extracts in this module:

- Lewe, G. (1991). "Understanding the need for workplace literacy partnerships."
- Jurmo, P. (1991). "Understanding lessons learned in employee basic skills efforts in the United States: No quick fix."
- National Center on Adult Literacy. (1995). *Workplace Literacy Resources.*

Read also Chapter 2 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to consult some of the items listed in *Workplace Literacy Resources* (National Center on Adult Literacy, 1995) and look at the ERIC documents whose abstracts are included in the module. Then use the information contained in your readings to write your response paper for Module 2.

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Jurmo, P. (1991). "Understanding lessons learned in employee basic skills efforts in the United States: No quick fix." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc., pp. 67-83. (ERIC Document Reproduction Service No. ED 333 180)

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Module 2 — Planning Issues

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National Center on Adult Literacy. (1995). *Workplace Literacy Resources*, from Participant Packet for "What works?: Literacy training in the workplace" videoconference, April 13, 1995.

Cover page and pp. 11-24

ERIC abstracts for ED 382 825, ED 382 826

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Introduction to Modules 3 - 8

By completing Modules 1 and 2, you have acquired considerable background information about the nature of workplace literacy and the need for workplace literacy programs. You are now in a position to apply that knowledge to the various stages of setting up a program:

- writing a proposal (Module 3),
- conducting a task analysis (Module 4),
- designing curriculum materials (Module 5),
- selecting supplementary materials (Module 6),
- developing lesson plans (Module 7), and
- constructing evaluation measures (Module 8).

You choose four of these modules and, after studying the materials in those modules, you complete a short practice exercise for each of them. The module materials include a sample practice exercise to help you. When you have submitted these four practice exercises (in two submissions of two exercises each), you will receive feedback on them to assist you with the next submission.

This last submission is the most important for the course and carries half the total credit for your grade. You will complete extensive applications in two of the areas for which you submitted practice exercises. It is intended that these applications be as real as possible. It is highly desirable that you develop them for an actual workplace, but you can use a fictional one if necessary.

Now read the article in this introduction to obtain an overview of the way that a workplace literacy program is developed:

- Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1991). "How to Establish a Workplace Basic Skills Program: A Blueprint for Success."

Read also Chapter 3 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to consult some of the items listed in *Workplace Literacy Resources* (National Center on Adult Literacy, 1995) and look at the ERIC documents whose abstracts are included in this introduction (a very small sample of the available program reports), as preparation for your work on Modules 3 - 8.

In addition, you will find much helpful material about workplace literacy on the Internet or World Wide Web. This rapidly-growing resource is changing daily as new materials are added to it. However, here are a few useful entry points to get you started with an indication of what each provides:

- AskERIC — http://ericir.syr.edu (Virtual Library, ERIC database and digests, lesson plans);

- Center on Education and Work — http://www.cew.wisc.edu/ (partnerships, curriculum, assessment);

- National Center on Adult Literacy — http://litserver.literacy.upenn.edu/ (research, resources);
- National Institute for Literacy — http://novel.nifl.gov/ (information, forums, resources);
- North Central Regional Educational Laboratory — http://www.ncrel.org/ncrel/ (resources, state information);
- U.S. Department of Education — http://www.ed.gov/ (initiatives, funding, services, publications).

Most of these Web pages are cross-linked through their lists of organizations, so that a search of one site can lead quite naturally to another, then another, then . . .

In this course, we also plan to have some workplace practitioners available by electronic mail for you to consult. For details on the development of this, see the Indiana University distance education page on the World Wide Web:

http://www.indiana.edu/''eric_rec/disted/

These practitioners will be able to respond to your questions about the reality of workplace literacy and comment on program ideas that you may want to try out on them.

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Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1991). "How to Establish a Workplace Basic Skills Program: A Blueprint for Success." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc., pp. 169-182. (ERIC Document Reproduction Service No. ED 333 180)

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ED 373 593, ED 369 429, ED 366 759, ED 363 146, ED 354 395,

ED 354 361, ED 352 558

Module 3 — Proposal writing

When a workplace literacy program is being started, writing a proposal for funding will often be necessary. This may be a proposal from the program provider to the company, or from provider and company to a federal or state agency. In the second case, the proposal will usually have to be presented in a particular specified format, but, in any situation, the main principles of proposal writing are to make a clear case for program need, to describe how to meet that need, and to provide details of personnel, timelines and budget. Before looking further at the details of proposal writing, we consider first the present funding climate for workplace literacy and compare the availability of public and private funding.

In the United States, no thorough study has been done of the extent or sources of government support for educational programs. However, a review by Bussert (1991) of 107 programs reported in the literature indicates that of 33 who described their funding sources, nearly three-fourths received at least partial support from federal, state or local governments. In 1991, the Department of Education awarded $19.5 million in National Workplace Literacy grants (Adult Literacy and Learning Bulletin, August, 1991). That year, a total of $242 million was allocated, mainly for basic skills education through the U.S. Adult Education Act, and that amount was expected to increase to $260 million in 1992 (Education Daily, August 14, 1991). Although there is no thorough computation of the total amount of federal money spent on workplace literacy, the combination of targeted funds and general ABE funds used in the workplace probably exceeds $50 million each year.

At the same time that federal funding was increasing, state and local funds were also expanding. Askov, Aderman and Hemmelstein (1989) report that West Virginia, South Carolina and North Carolina provide 100% matching funds for workplace literacy projects, and Massachusetts also has matching funds (Stein, 1989). Since 1989 the states of Florida, Idaho, Michigan, Missouri, Tennessee, Utah, and Virginia have become more heavily involved in funding and organizing workplace literacy initiatives (Chynoweth, 1989).

More importantly, the proportion of state versus federal funding has shifted since the late 1980s. While the total of federal funding for the National Workplace Literacy Program has remained slightly below $20 million per year, state funding has almost certainly exceeded this level. The Bussert survey (1991) indicates that the majority of the 33 programs examined had multiple sources of funding. Support came in part from federal sources (27% of programs), state/local government sources (48% of programs), businesses (67% of programs), union funding (9% of programs), and other groups such as area literacy councils and libraries (12% of programs). Since the late 1980s, the ratio of state versus federal funding has changed. In Virginia, for example, it has moved from 0% state/100% federal to 51% state/49% federal. State literacy funding may become the driving force in the implementation of future literacy projects (Chynoweth, 1989).

Even though the level of state and federal funding has increased, the amount spent by businesses on workplace education still far exceeds government contributions. According to a survey of 20,000 U.S. employers with more than 100 employees conducted by the American Society of Training and Development, businesses spent more than $44.4 billion on training in 1989. Determining what fraction of this $44.4 billion went to workplace basic skills instruction is no easy task. About $4 billion (or just less than 10%) went to programs labeled remedial. Not all workplace literacy programs are considered remedial, however. Many workplace basic skills programs have tended to avoid terms such as

"literacy training" in favor of courses labeled communication skills, technical preparation, team building, clerical skills, problem solving, and other similar categories. In any case, a conservative estimate is $4 to $5 billion spent on workplace basic skills instruction by businesses. This contrasts dramatically with the estimate mentioned above that only $50 million in U.S. federal funds was spent on workplace literacy instruction in 1989. Thus, most businesses rely on federal funds only for seed money to begin a literacy program.

Thus it can be seen that the most likely audience for a workplace literacy proposal is the business where the program will be provided, but the audience may also be a state or federal agency. In any case, the proposal narrative should include the following elements:

- an introduction setting out the need for the program, describing target worker groups, and listing program goals;
- descriptions of the classes proposed—their types, timing, and content;
- an outline of the curriculum—particularly the mix of custom-designed and off-the-shelf curriculum;
- the provider's preparation needs—lead time for conducting task analyses, designing curriculum, and recruiting learners;
- space and materials needed by the project—classrooms, storage, books, computers;
- descriptions of project personnel—their qualifications and experience;
- the evaluation plan—methods for gathering data for pre/post comparison to show program gains.

In addition, a full submitted proposal will also include:

- timeline—a month by month chart, showing the progression of preparation and teaching activities;
- budget— including project salaries, fringe benefits, supplies, communication, and travel;
- resumes for all project personnel.

Now read the articles and extracts in this module:

- Anderson, A. (1991). "Understanding a project proposal development."
- What to look for in a workplace literacy program proposal.
- Sample of a program development proposal to a state agency.

In addition, look again at pp. 26-28 in Chapter 2 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to look at the ERIC documents whose abstracts are included in the module (as well as others in the Introduction to Modules 3-8). Then use the example practice exercise to help you complete the assigned practice exercise for Module 3.

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Adult Literacy and Learning Bulletin. (1991). Washington, DC: U.S. Department of Education, August, 1991, *3* (4), 5.

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Module 3 — Proposal Writing

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pp. 107-124

What to look for in a workplace literacy program proposal

2 pp.

Sample of a program development proposal to a state agency

7 pp.

ERIC abstracts for ED 362 892, ED 361 114

Example practice exercise for Module 3

EXAMPLE PRACTICE EXERCISE FOR MODULE 3

MODULE 3 — PROPOSAL WRITING

Write notes outlining a proposal narrative for a workplace literacy program at Green Shield Health (described below). Include notes on the need for the program, the types and sizes of classes, when and how often they should meet, outline of curriculum, amount of custom-designing, and recruitment strategies.

Green Shield Health

This small medical benefits office has 40 employees in customer service, claims processing, and general administration. The management has noticed problems with all three groups of employees. They have difficulty reading instruction charts for processing claims, reading computer screens of customer information, copying reference numbers, calculating premiums and benefits, writing letters to customers, and advising potential customers by telephone.

The office is also introducing more flexible working patterns: for example, one employee will follow a claim right through, rather than several people each dealing with one stage of the process. Since job distinctions are blurring, all employees will need all the relevant skills.

Example practice exercise

Need for the program:

reading (charts and computer screens), writing (letters), math (premiums and benefits), listening/speaking (telephone) — all basic skills relating to customer relations.

Types and sizes of classes:

With the need for all to develop all skills, start with a Customer Relations class focusing on telephone skills (listening/speaking while reading computer screens) and letter writing (including claims processing and calculating premiums and benefits).

To make up each class, divide the 40 employees into groups of 10 (mixed across current job responsibilities).

When and how often classes meet:

Because the program is job-focused, classes will be on company time—held in the last hour of the working day. Each class will meet twice a week for 10 weeks (total 20 hours). Given the small size of the workforce, only one group of 10 can be released at any one time, but it may be possible to run two classes on different days over the same 10-week period if teachers are available to do this.

Outline of curriculum:

Throughout, use the skills employees bring to class by mixing workers from different areas of the office.

Telephone skills—role play employee/customer conversations (for this job and reverse situations such as mail ordering by telephone).

Letter writing—gather letters written on the job, look at patterns of letter structure, commonly misspelled words, etc; practice writing letters in class, critique each others' efforts; construct job aid with letter structures and dictionary of technical terms.

Math—bring job forms and rules to class, practice individually and in small groups with realistic calculations.

Amount of custom-designing:

Telephone skills—develop start-up scenarios to simulate employee/ customer conversations (later, workers can develop others from their experience).

Letter writing—develop some customer letters for workers to reply to, gather others from the office.

Math—develop sets of exercise worksheets for practice of separate premium and benefit calculations.

Recruitment strategies:

Although attendance is mandatory, employees will still need convincing of the program's value. Therefore, recruitment will begin with a meeting of all staff to outline the changes taking place in the office and deal with initial questions and concerns. This will be followed up with flyers in pay envelopes describing the program in more detail. The program developer and/or instructor will frequently be available to answer questions about the classes (for example, while gathering information about job tasks for curriculum development). The first group(s) of 10 to attend class will be volunteers or will be selected as those most likely to be enthusiastic advocates among their colleagues.

WHAT TO LOOK FOR

IN A WORKPLACE LITERACY PROGRAM PROPOSAL

The purpose of this guide is to provide a checklist of effective education and evaluation practices to look for in proposals for workplace literacy programs. The outline below is a checklist of items that should appear in a program proposal.

1. WHO?

   Who will be providing the workplace program?

   Are the providers experienced in workplace education?

   Do they have trained instructors, who are experienced in workplace education?

2. WHAT?

   What are the program's stated goals?

   Are they clearly related to the local workplace?

   What specifically will be taught in the program?

   Is the curriculum custom-designed to meet employer and employee needs?

   Is it relevant to the jobs and workers involved?

3. HOW LONG?

Is learning time sufficient to accomplish all program goals?

30 - 50 hours is typical for a workplace program

50 -100 hours is needed for a one year grade gain in reading or math

10 - 20 hours may be enough to achieve a single narrow goal, such as how to use new safety forms or a new variation of quality assurance materials

4. HOW RECRUITED?

Is attendance mandatory for certain workers?

If attendance is voluntary, does the company offer incentives to learners: paid time off, classes during work-time, rewards, recognition?

5. HOW EVALUATED?

Is the proposed evaluation appropriate?

Does it match program goals?

Does it test what is to be learned?

Does it involve a variety of instruments (including competency tests)?

Is there some form of external monitoring?

(Sample of a Program Development Proposal to a State Agency)

Developing Model
Workplace Literacy Training Programs
for
Indiana State Employees

Denise Henard, Project Director & Larry Mikulecky, Project Coordinator

A proposal to
The Indiana Office of Workforce Literacy
325 West Washington Street
Indianapolis, IN 46204

December, 1990

Project Overview

We propose to develop and implement a high caliber, model workplace literacy program for Indiana State Employees in need of upgrading their skill levels. Program development will include gathering evidence for program impacts on learner skills, learner families, and learner productivity. It will also include the construction of a set of guidelines and samples of effective program elements to be used in transferring the model program to other state sites. The Indiana Department of Correction will house the model program in the Women's Correctional Institute and provide support in the form of space and staff support in developing materials and courses to integrate basic skills training into technical training for correctional officers, food service employees, and other state employees at the Institute.

Rationale and Project Objectives

Several national trends related to job performance and education have begun to have an impact in Indiana. The educational and information processing demands of most occupations are on the rise. At the same time, many individuals employed or available for employment in these increasingly complex jobs have insufficient literacy and computational skills. With fewer young people available to hire and more competition for moderate to highly trained workers, large employers (like the State of Indiana) must incorporate workplace literacy training and human resource development into management plans. The alternative is to face increasing personnel and productivity problems.

Several factors limit the effectiveness of much human resource development. Among these factors are:

- Training effectiveness subverted by low basic skills among learners,
- Single emphasis training programs which don't acknowledge that employees have differing learning needs, and
- Lack of program assessments which provide information sufficient for useful program revision.

In the area of workplace literacy program development, the State of Indiana needs to lead by example. This means developing both a model workplace literacy program and a plan for extending that program to other state agencies and private employers. To support this leadership role, we propose to develop a model workplace literacy program which overcomes the usual limitations of human resource development programs cited above. The program will integrate basic skills training with job related technical training while attempting to increase the general literacy and educational levels of employees. The program will also be multi-stranded in the sense

that several types of courses will be offered. Among these are:

- Courses which integrate basic skills with technical training for correctional officers and food service personnel.
- Courses providing learning skills support for experienced employees in upward transition (i.e. preparing for promotional examinations or taking post-secondary correspondence courses.
- Courses providing family literacy training and/or GED preparation for parents concerned about helping their children while improving their own literacy levels.

Why the Women's Correctional Institute?

The Women's Correctional Institution was selected as the location for the first State of Indiana model workplace literacy program for several reasons. Initially, strong support for human resource training exists among leaders in the Department of Corrections in general and at Women's Correctional Institute in particular. This support includes that of Tommy Norris, Deputy Commissioner of Programs and Community Services, Bruce Jordan Superintendent of the Women's Correctional Institute and Gary Scott, Supervisor of Education. Secondarily, this support extends to a willingness to modify mandated technical training to integrate basic skills instruction and to provide incentive pay for employees to attend such training. Thirdly, Institute training staff have been amenable to working together to develop such training and to gather baseline data to assess the effectiveness of such training. Finally, the size of the Institute is large enough to provide sufficient employees experiencing a basic skills gap and small enough to be manageable for a pilot model program.

The Plan

We propose to develop a model workplace literacy program and consolidate lessons learned into a guidebook for extending effective workplace literacy programs to other sites. In order to accomplish these goals we will accomplish the following tasks:

I. **Contacting prison personnel and selecting target groups (Month 1)**

Initial meetings with prison officials and trainers have occurred. Some target groups (i.e. new corrections officers, officers seeking promotion, food service employees, and single parents) have been suggested. Further prison visitations and discussions with on-site personnel will take place during the first few months to determine which groups meet research and instructional parameters.

II. **Collecting baseline data on target groups. (Months 1-4)**

To test program impact it will be necessary to determine the state of affairs before the program began. This means gathering baseline data of learner abilities (i.e. test scores, performance on existing reports and job tasks, absenteeism, morale, team-work performance, problem solving behaviors, and literacy behaviors on the job and at home). In addition, we will need to develop methods to assess the quality of employee written reports and literacy related job performance.

III. **Develop, deliver, and evaluate several courses as part of multi-strand workplace literacy program. (Months 2-11)**

Several courses will be developed as part of a multi-strand program. These will include technical courses which integrate basic skills, learning support courses, and courses which improve workers general and family literacy levels.

1. Technical training is involved with raising the level of proficiency of reading, writing and math while learning a technical skill. It is necessary for correctional officers to write clear concise reports of inmate infractions and comprehend printed directives and policy handbooks. Food service employees must be able to follow printed recipes and heath guidelines. In addition the must write reports and use computational abilities to modify recipes. Current technical training does little to improve employee basic skills in this area.

The technical training strand will target the correctional officers and food service employees by developing two courses. These courses will integrate technical and basic skills training. To develop and custom design these courses will involve the following:

1. Analyzing job tasks to determine key tasks and basic skills problems
2. Gathering baseline data on learner needs, abilities and job performance
3. Developing a recruitment plan
4. Designing instructional materials based on these analyses
5. Gathering supplementary materials related to analyses
6 Delivering instruction, and
7. Evaluating instruction through post assessment of learners and interviews, and comparison to baseline data.

The technical training strand will not be the complete workplace literacy program though it will be likely to have impact for the greatest number of employees. Other strands will address the needs of specialize groups.

One course will work with a select group of corrections officers who are

interested in promotion and continued education through correspondence courses and/or post-secondary courses. Prison officials indicate approximately a dozen corrections officers are interested in passing the sergeant promotion examination and in further education. A special learning support course will be developed to meet the needs of these employees. The course will follow the same seven step development and evaluation process outlined above.

Prison officials indicate that a significant number of employees are single parents with concerns about the schooling of their children. These parents, in addition, often have limited basic skills themselves and need special tutoring help. A course designed to improve parental literacy skills will be developed and will follow the same seven step development and evaluation process outlined above. It is possible this course could lead to GED completion for some employees.

IV. **Compiling, analyzing, and disseminating program effectiveness information. (Months 10-12)**

Some strands and instruction are likely to be more effective than others in terms of learner improvement in job performance, basic skills, and satisfaction. Careful analysis of pre and post assessment data and examination of assessment devices will occur during months eleven and twelve of the program. Results will be used to make program revisions and shared with the public through press releases and presentations at educational conferences.

V. **Develop program planning guide (Months 10-12)**

A major goal of our efforts is to develop a model for Indiana Workplace Literacy programs which can be transported to other sites. To facilitate this process, lessons learned in developing the model program will be consolidated into a program planning guide. This guide will include descriptions and samples of assessment methods, task analyzes, instructional courses and materials, recruitment strategies, evaluation tools, and tips for effective program operation.

VI. **Personnel and Responsibilities**

Project Coordinator: Larry Mikulecky

Mikulecky is a Professor of Education at Indiana University-Bloomington and an internationally recognized expert on workplace literacy programs and research in workplace literacy. He has professionally designed workplace literacy curriculum and served as a consultant to government, industry, and military agencies in the U.S., Canada, and Australia.

Mikulecky will serve as overall coordinator for the model workplace literacy project. His duties will include:

- Consulting with the project director on a regular basis on issues of program design, instruction, materials development and selection, assessment, and personnel.
- Training the director and other project personnel in performing job-based literacy task analyses and developing custom designed curriculum.
- Helping to design and select measures and methods for gathering base-line data for project assessments and evaluations.
- Analysis of program evaluation data.
- Providing guidance and document design assistance for constructing the workplace literacy program planning guide.

Project Director: Denise Henard

Denise Henard is an experienced Adult Basic Education teacher who has previously developed a workplace literacy program with a major automotive manufacturer. He duties will include:

- Consulting with the project coordinator on a regular basis on program design, instruction, materials development and selection, assessment, and personnel.
- Working with the Coordinator and other project personnel on job-based literacy task analyses and developing custom designed curriculum.
- Helping to design and select measures and methods for gathering base-line data for project assessments and evaluations.
- Teaching some classes and securing instructors for others.

Instructors:

Several courses will be developed for the workplace literacy training program. We project two 40 hour courses tied to technical training, a learning support course linked to promotion or post-secondary aspirations of workers, and a course providing long-term literacy support for parents and for low literates interested in pursuing GED certification. The technical courses and the learning support course may be offered in two or more waves during the year, depending upon employee interest and need.

Instruction for these courses will be provided, in part by the project director who will be able to take a part-time role of instructor. Other instruction will be provided on an hourly basis by competent individuals identified by the project coordinator and director. Likely sources of such instructors are experienced educators from the Correctional Institute, Indiana University, and other state education providers.

Curriculum Developers:

A goodly amount of the curriculum for this program will be custom designed. So too, will be the program planning guide. Though some of this work will be performed by the project coordinator and director, a good deal of additional support will be required if materials are to be developed an ready to be used within project time-lines. The project coordinator and director will select individuals trained in curriculum and document design principles to help with curriculum development tasks.

Module 4 — Task Analysis

The purpose of conducting a task analysis as part of the preparation for a workplace literacy program is to make sure that the program will be teaching what is really needed for improving job performance. Recall the fact that most people are not able to transfer what they learn from one context to another. It is therefore very important to target the appropriate skills and teach in the appropriate context. Of course, such an analysis of job tasks applies only to program strands that are job-centered—it would not be suitable, for instance, in a GED preparation strand.

Once the program provider, usually with the help of an advisory committee, has determined which job areas to target in the program, a task analysis of those areas consists of the following steps:

- job task analysis: what tasks are critical and are causing difficulty?
- literacy task analysis: what literacy skills are needed to carry out the selected job tasks?
- toward curriculum: which tasks and skills should be given highest priority by the program?

At all stages of this process, it is vital that the information being used is reliable. Thus a program provider should seek out multiple sources of information: company managers, human resources personnel, shop-floor supervisors, and workers carrying out the job tasks under analysis. As well as interviewing representatives of all these groups, the provider should observe workers doing the job tasks and gather printed materials that workers use in these job tasks. In order to design appropriate curriculum, the provider must have a clear idea of just how those materials are used in the real workplace situation.

Now read the article in this module:

- Taylor, M. C., & Lewe, G. R. (1991). "How to plan and conduct a literacy task analysis."

Read also pp. 1-14 of Drew & Mikulecky (1988), and look again at pp. 33-39 in Chapter 3 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to look at the ERIC documents whose abstracts are included in the module (as well as others in the Introduction to Modules 3-8). Then use the example practice exercise to help you complete the assigned practice exercise for Module 4.

References

Drew, R., & Mikulecky, L. (1988). *How to gather and develop job specific literacy materials for basic skills instruction.* Bloomington, IN: Office of Education and Training Resources, School of Education, Indiana University. (ERIC Document Reproduction Service No. ED 297 160)

Taylor, M. C., & Lewe, G. R. (1991). "How to plan and conduct a literacy task analysis." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc., pp. 217-235. (ERIC Document Reproduction Service No. ED 333 180)

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List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 4 — Task Analysis

Taylor, M. C., & Lewe, G. R. (1991). "How to plan and conduct a literacy task analysis." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc. (ERIC Document Reproduction Service No. ED 333 180)

pp. 217-235

ERIC abstracts for ED 374 334, ED 337 580, ED 369 955

Example practice exercise for Module 4

EXAMPLE PRACTICE EXERCISE FOR MODULE 4

MODULE 4 — TASK ANALYSIS

Conduct a task analysis for the everyday task "Help from the Yellow Pages" described below. Read the description to each person you ask to do the task. Observation of 2-3 people performing the task should be part of your analysis. In your conclusion, you should decide which aspects you would concentrate on if you were teaching this task, with reasons based on needed skills and possibly cost factors.

Help from the Yellow Pages

You return home to your apartment one Saturday afternoon to find water all over the floor from a burst pipe. There is no janitor on duty in the building, and you are new in town and so have no idea who to call. You pick up the Yellow Pages . . .

Describe in detail everything you do.

Example practice exercise

Notes on Person 1:

1. Looked up "Pipes" (not relevant) and then "Water" (didn't work either). Went to Index at front and skimmed down entry under "Water" until found "Plumber" and turned to that entry.
2. Decided to look at display ads only (probably larger firms) and skimmed for 24-hour service. Wrote down names and telephone numbers of three companies.
3. Called first company and asked when they could come. They said "Four hours." That was OK with Person 1, who didn't ask any other questions or call any other companies. [To avoid unpleasantness with real plumbers, the interviewer answered Person 1's imaginary call.]

(Note: Person 1 also mentioned finding mains faucet and turning water off, before calling for help.)

Notes on Person 2:

1. Looked for Index at back of Yellow Pages—not there. After a pause, thought of "Plumber" and turned to that entry.
2. Looked at display ads only (no reason given) and skimmed for local company with 24-hour service. Circled five display ads.
3. Called each company and asked when they could come and how much it would cost. Wrote this information next to each display ad. [See note on real plumbers above.]
4. Made a decision balancing cost against speed, with speed as the primary factor (rejecting only one very expensive call-out charge).
5. Called back to chosen company to arrange visit.

Key skills:

1. Knowing how to use Index (and where to find it) or brainstorming appropriate term for relevant entry.
2. Deciding on criteria for choice.
3. Skimming section for entries fitting criteria and making selection.
4. Telephoning companies, asking questions and noting answers.
5. Making decision based on information received.

Conclusion:

Only two areas caused any difficulty. The first was the initial finding of the correct section in the Yellow Pages, which could produce a delay in fixing the problem. Instruction would address brainstorming relevant terms and using an Index. The second potential difficulty was making a choice without considering cost. It is possible that Person 1 chose the company with the expensive call-out charge, and may have obtained much cheaper service with little or no delay. Instruction would address the reasons for choosing selection criteria and ways of comparing their importance.

Example of Application Assignment for Module 4

THE WORKPLACE SETTING

The setting for this **Literacy Task Analysis** is a small machine shop which machines parts to customer specifications based on blueprint drawings. When an order is received for parts never before run, the shop makes 1-5 sample pieces which they will return to the customer with an Initial Sample Inspection Report (ISIR). While a run is in process, parts are inspected at predetermined intervals. At the end of a run, prior to shipment, a certain number are inspected for conformity to specification. The Inspection Data Sheet is used for these audits.

To do this task, the worker moves back and forth among the two documents (the blueprint and the Inspection Data Sheet) and the part he is examining. He may also refer to other documents, including in-process drawings (a simplified form of blueprint showing only the operations performed in the shop, usually with tighter tolerances). He must also be familiar with a variety of gauges.

He begins by filling out the top of the form. He then identifies and highlights on the blueprint the characteristics he will be examining. He measures each characteristic on the part, compares it to the specifications on the blueprint and enters the information on the form. Measuring and entering the information is repeated for each part examined.

The problem in this company is that, aside from management, there is only one person qualified to do these inspections, which occur daily. This task is also important because the person who does it offers a fresh perspective to check the entire system from conception through the finished product.

LITERACY TASK ANALYSIS
QUALITY CONTROL

Task: Complete Inspection Data Sheet for Initial Sample Inspection, In-Process Inspection or Final Audit

TASK DESCRIPTION	LITERACY SKILL APPLIED
1. **Fill out** top section of form.	1-1 Locate customer name, part name and number on blueprint.
	1-2 Locate lot number and lot quantity on job card in process packet.
	1-3 Locate job number on purchase order.
	1-4 Verify date on a calendar.
	1-5 Determine sample quantity using the Sampling Plan (job aid) or MIL STD 105-D.
	1-6 Enter type of audit, writing in audit type if other than in-process or final audit.
	1-7 Number pages using a ____ of ____ format.

2. **Identify** key characteristics to aid in sequencing for numbering purposes and for statistical sampling purposes; then **highlight** and **number** the characteristics of all operations performed on the part.	2-1 If necessary, compare blueprint to process drawing to identify operations carried out in shop. 2-2 Read the tolerances for various dimensions. 2-3 Locate information about surface finishes to see how they apply in determining key characteristics. 2-4 Make a judgement about whether tolerances are sufficiently close to be considered key.
3. **List** the descriptions of the characteristics (inside diameter, outside diameter, overall length, etc.) and the dimensions from the blueprint in the first two columns of the form.	3-1 Be familiar with manufacturing terminology. 3-2 Know all graphic language (meaning of symbols, lines, etc.) 3-3 Read dimensions for characteristics and make metric to English conversions where necessary. 3-4 Transfer information completely and accurately to the form.

4. **Compare** the actual part to the drawing; **measure** characteristics, then **enter** inspection method and the actual dimensions of the part being measured.	4-1 Understand how views of the object on the drawing pertain to location of the characteristics. 4-2 Determine appropriate gauge and apply knowledge of its correct use. 4-3 Accurately measure actual characteristics and any relational characteristics. 4-4 Determine whether actual measurement is within blueprint tolerance. 4-5 Accurately record gauge reading on the form.

RELATED DOCUMENTS:

Blueprint
In-process drawings
job card/process packet
purchase order
MIL-STD 105-D
Sampling Plan (job aid-summary of MIL-STD 105-D)
gauge manuals
customer specific hole tolerance standard charts

VITAL SKILLS NEEDED FOR THIS TASK:

Some aspect of blueprint reading is needed for each step of this task (1-1, 2-1, 2-2, 3-1, 3-2, 3-3, 4-1, 4-2, and 4-4). It is therefore the most critical skill for successful completion of this task, particularly the following blueprint reading skills:

a) Understanding views

b) Graphic language

c) Dimensioning, tolerancing and surface finishes

d) Title block

A second, and corollary, skill is being able to identify key characteristics. This is because not every feature is measured on every audit. For some types of audits, only key characteristics are examined. If key characteristics are not identified in any other way, they can usually be identified by a skilled reading of the blueprint.

Blueprint reading and identification of key characteristics are identified as skill deficits because there needs to be someone else trained to perform the task of verifying the parts but present blueprint reading skills in the plant are too limited for this task.

A third vital skill is the proper choice, set-up and use of gauges. The ability to convert back and forth between metric and English is necessary because gauges in the shop may not be the same standard as the drawings. Again, while most people in the shop have some familiarity with gauges and conversions, the skill levels are not high enough for this task.

INSPECTION DATA SHEET

IN-PROCESS _____ FINAL AUDIT _____

Inspector _____ Customer _____

Date _____ Part number _____

Loi quantity _____ Part name _____

Sample size _____ Lot number _____

Page # _____ of _____ Job number _____

Description	Blue Print Dimensions	Inspection Method	Serial ___ Actual	Serial ___ Actual	Serial ___ Actual	Serial ___ Actual

SAMPLING PLAN ZERO DEFECTS NORMAL

AQL →	.40	.65	1.0	1.5
LOT SIZE ↓	SAMPLE SIZE			
2-8	*	*	*	*
9-15	*	*	13	8
16-25	*	20	13	8
26-50	32	20	13	8
51-90	32	20	13	8
91-150	32	20	13	12
150-280	32	20	29	19
281-500	45	47	29	21
501-1200	73	47	34	27

ACCEPT = 0 REJECT = 1

Module 5 — Curriculum Materials

Designing curriculum materials for a job-related class follows directly from a task analysis and is driven by the results of that analysis. The conclusion of the task analysis should highlight the job tasks and skills that are causing workers most difficulty and that are most important for successful completion of the job. The objective of the curriculum to be designed from the task analysis is to bridge the gap between current worker skill levels and the skills needed to carry out job tasks.

However, custom-designing curriculum around particular job tasks takes a lot of time, and therefore a program provider needs to decide which are the key skills and tasks to concentrate on in the curriculum design. This central core of the job-related class can then be supplemented by other, off-the-shelf materials, such as text books or computer programs, as appropriate (see Module 6).

Because of the limited transfer, for most learners, from one context to another, custom-designed curriculum should be built around actual job materials (gathered during the task analysis) and include direct practice at real job tasks. For example, if a certain form is used to record customer orders or productivity data, then that form should be incorporated into instruction, together with simulation activities that closely resemble job situations. If interpersonal skills are part of the curriculum, they can be taught through role play—of, for instance, team meetings or dealing with customer complaints.

An important factor to keep in mind is that different people learn in different ways, so that class activities should be varied and adopt multiple approaches to the same skills. This will not only accommodate a range of learning styles, but also allow reinforcement of skills being learned while avoiding repetitive exercises. For each class activity, the curriculum should incorporate a build-up from activating prior knowledge and preliminary skills, through practice at the job simulation task, to feed-back and assessment about what has been learned. Whenever possible, life skills that parallel the job task should be included so that similar skills can be practiced, both on the job and away from the workplace.

Now read the article in this module:

- Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum."

Read also pp. 12-18 of Drew & Mikulecky (1988), and look again at pp. 39-42 in Chapter 3 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to look at the ERIC documents whose abstracts are included in the module (as well as others in the Introduction to Modules 3-8). Then use the example practice exercise to help you complete the assigned practice exercise for Module 5.

References

Drew, R., & Mikulecky, L. (1988). *How to gather and develop job specific literacy materials for basic skills instruction.* Bloomington, IN: Office of Education and Training Resources, School of Education, Indiana University. (ERIC Document Reproduction Service No. ED 297 160)

Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc., pp. 237-261. (ERIC Document Reproduction Service No. ED 333 180)

List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 5 — Curriculum Materials

Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc. (ERIC Document Reproduction Service No. ED 333 180)

pp. 237-261

ERIC abstracts for ED 337 580, ED 354 395

Example practice exercise for Module 5

EXAMPLE PRACTICE EXERCISE FOR MODULE 5

MODULE 5 — CURRICULUM MATERIALS

Outline the design of curriculum materials for teaching the workplace literacy topic "Measuring to 16ths" described below. These materials should be for two hours of class activity. Describe the materials and outline how you would use them. (It may help to imagine that you are providing these materials for another teacher to use.)

Measuring to 16ths

Wood products workers are making many errors in measurement, causing much wastage of lumber. A task analysis has shown that workers are confused about the meanings and relative values of fractions with different denominators.

Example practice exercise

Materials:

Sets of five card rulers (one for each learner)—a large "inch" undivided, another divided into halves, the others into quarters, eighths and sixteenths.

Worksheet 1—Pictures to fractions, showing shapes divided into 2, 4, 8 or 16 with some fraction shaded (what is the fraction?)

Worksheet 2—Comparison of fractions, showing pairs of fractions with denominators 2, 4, 8 or 16 (larger/smaller/equal?)

Rulers, screw gauges, pieces of wood, metal, plastic, etc.

Worksheet 3—Form for recording measurements (object, length)

Classroom use:

Start with card rulers—class discussion of meaning of fractions, comparison of sizes, equivalent fractions.

Small group work on Worksheet 1, then whole class check answers and discuss.

Individual work on Worksheet 2, then check in small groups.

Pass about 5 objects around the class to be measured, and check results. Discuss differences—mistakes or small errors, and idea of accuracy.

With all objects to be measured placed around the room, individual work on Worksheet 3, followed by comparison in small groups, and final class discussion.

Example of Application Assignment for Module 5

CURRICULUM MATERIALS

Background: I have been working with a small group of workers who, despite their many years as crane operators, were unable to pass a written test for the crane operator position. They qualified on the job but were unable to pass the test because their reading skills were very low. Their problems were varied; one read extremely slowly but had good comprehension, the others were not equipped with word attack skills. I worked with them first individually and now in a group with the specific workplace materials.
Working from the crane operator's training manual I have developed materials for them to master the job-specific vocabulary which would enable them to pass the test.

Lesson: This lesson picks up after working with terms from the glossary. I wanted to put this vocabulary into a larger and a more personalized context than the manual which reads like an interminable list of rules. The writing style is often convoluted and difficult to understand.

Procedure: Students have been asked to bring in material from the mill, more specifically reports. The report included here is dense with vocabulary items used in the glossary. In order to first personalize the material the two hours are based on their own experiences. The next two hour lessons were based on the Crane Inspection Report which is included here.

1st hour:

1. Ask students to discuss safety issues on the cranes. Have any of them witnessed or been involved in an accident?
2. After the discussion, work individually with students typing dictated stories of accidents*.
3. Students read their stories for homework.

* These rather sensational experiences are chosen because students are highly motivated to participate and this topic ensures participation by all.

2nd hour:

1. Students voluntarily read their stories aloud.
2. Students fill in cloze exercise based on their own stories.
3. Students read an actual accident report*.
    a. I draw a picture on the board of the situation based on the student's oral description.
    b. We skim the report for words we have practiced from the glossary, e.g. *radio-controlled, lift, bridge control.*
    c. I read the report aloud; students follow along.
    d. We discuss the accident. I ask for details that come directly from the report.

3rd hour:

1. Begin class with a discussion of typical problems that come up when they inspect their cranes.
2. Pass out a copy of the original crane inspection report.
3. Ask students how to fill in the top portion of crane report.
4. Working with an enlarged version of the checklist, read a number of different items in the list and ask students to identify them by number.
5. Have students look for and underline words that were reviewed in the glossary of crane terms.
6. Ask students to describe crane inspection scenarios and ask the others to identify the number on the report sheet that corresponds to the problem described.

* The student who described this particular accident in his language experience story brought this report in also.

4th hour:

1. Pass out 3 copies of the crane inspection report to each student and a series of scenarios to read.

2. Have students fill out the crane inspection report based on the scenarios they are reading.

3. Provide common vocabulary items on board, such as *broken, missing, loose,* etc. Provide instructions for filling out the bottom portion of the report.

Included: Sample dictated story,
cloze exercise and accident report.
Sample crane reports.

L530
Summer, 1993

UNFORTUNATE ACCIDENTS

About three or four years ago, I was supposed to be assigned to a labor job. The foreman canceled my job and gave me another job. They sent another guy to the job they were going to send me to.

He started to work in some kind of shanty. A guy from the bull gang started early and started a fire that was carried through the pipeline. The shanty exploded and the kid inside got burned, about 95% of his body. He got up, walked out, sat down and that was it. He died. He was a nice, young kid, though.

There was a woman learning to run the remote control crane. And she started to work and someone was yelling at her. She got confused and pulled the wrong control. She was crushed by a roll. She was scared to run the crane and people said she was accident-prone. She should of told somebody she was scared and they could have taken her off the cranes. She could of hurt somebody else, too.

UNFORTUNATE ACCIDENTS

About three or_____years ago, I was supposed___ be assigned to a labor____. The foreman canceled my job_____gave me another job. They_____another guy to the job_____were going to send me ___.

He started to work in_____kind of shanty. A guy_____the bull gang started early____started a fire that was _____ through the pipeline. The shanty _____and the kid inside got_____, about 95% of his body. _____got up, walked out, sat _____and that was it. He_____. He was a nice, _____kid, though.

There was a woman_____ to run the remote control_____. And she started to work _____someone was yelling at her. _____got confused and pulled the wrong_____. She was crushed by a_____ She was scared to run_____crane and people said she____accident-prone. She should of_____ somebody she was scared and_____could have taken her off_____cranes. She could of hurt _____else, too.

ACCIDENT DESCRIPTION:

On October 17, 1988, a No. 4 Roll Shop Material Transporter Learner sustained massive internal crushing injuries to the abdomen.

The deceased, in her third week of training as a radio-controlled EOT crane Material Transport Learner, was moving a work roll (weight 7,500 lbs.) from No. 14 grinder to place in a roll rack located 30 feet east of the grinder. Two co-workers were working with the deceased at the time, one on the south end of the lift and her trainer was positioned immediately to the deceased's right (west). As the lift was moved east, it developed an east-west swing. The deceased was positioned to the north of the swinging roll and was instructed by the trainer to correct the swing. Co-workers stated that she looked down to the controller and apparently activated the bridge control, which caused the roll to move in a northerly direction. The co-worker on the south end of the lift observed the roll moving towards her and grabbed the south nylon sling in attempt to sway the roll end away from the deceased. This partially deflected the movement of the roll, but the end of the roll struck her in the upper left abdomen and momentarily pinned her between the lift and another roll, stacked two high, on a rack behind her.

INSPECT THE FOLLOWING ITEMS: ENTER BELOW ANY DEFECTS FOUND. ☐ INSPECT HOUSEKEEPING, CRANE CAB & BRIDGE CLEAN & FREE OF DEBRIS.

☐ 1. SAFETY LOCK AND TAG.

☐ 2. LOCK OUT TOP MAIN SWITCH.

☐ 3. CHECK ALL REDUCTIONS, FOR LOOSE OR MISSING BOLTS.

☐ 4. CHECK ALL BRIDGE MOTORS FOR LOOSE BOLTS AND WEDGES.

☐ 5. CHECK ALL BRIDGE BRAKE ASSEMBLIES FOR WEAR, LOOSE PINS OR LEAKS.

☐ 6. CHECK COUPLINGS FOR LOOSE OR MISSING BOLTS.

☐ 7. CHECK OIL DRIP PANS

☐ 8. CHECK TOE BOARDS, FLOOR PLATE, STAIRS, HANDRAILS, AND LIGHT OPENINGS FOR BAD WELDS OR BAD HINGES.

☐ 9. CHECK ALL BRIDGE WHEELS FOR LOOSE OR MISSING BOLTS, FLANGES OR HOT BEARINGS.

☐ 10. CHECK BOSS PINS ON EACH END TRUCK FOR RETAINER KEEPERS.

☐ 11. CHECK RUNWAY, TROLLEY AND BRIDGE BUMPERS.

☐ 12. CHECK TROLLEY HOT RAIL SHOES (VISUALLY).

☐ 13. CHECK CAB AND BRIDGE FIRE EXTINGUISHERS – PIN, SEAL AND BRACKET(S).

☐ 14. CHECK BLOCK(S) FOR POSTED LOAD LIMIT.

☐ 15. CHECK HAND LINE.

☐ 16. CHECK ALL CONTROLLERS FOR SMOOTH OPERATION AND LATCH ON HOIST CONTROLLER?

☐ 17. CHECK ESCAPE MECHANISM – VISUALLY.

☐ 18. CHECK WARNING DEVICES.

☐ 19. CHECK BOMBSITE – WORKING.

☐ 20. CHECK MAGNET STATUS LIGHT.

☐ 21. CHECK BRIDGE LIGHTS.

☐ 22. CHECK SWITCHES FOR IDENTIFICATION.

☐ 23. CHECK WINDOWS AND MIRRORS, LOOSE OR BROKEN – (CHECK NECESSARY).

ITEMS BELOW REPRESENT CRITICAL ITEMS. ANY CRITICAL ITEM THAT IS FOUND DEFECTIVE MUST BE REPAIRED BEFORE CRANE IS OPERATED.

☐ 24. CHECK HOIST CABLES AND MAGNET CABLES (VISUALLY).

☐ 25. CHECK HOIST LIMIT SWITCH.

☐ 26. CHECK BRIDGE BRAKES BY TRAVELING & APPLYING BRAKES.

☐ 27. CHECK HOOK SAFETY LATCH IF EQUIPPED.

☐ 28. CHECK CRANE BLOCK HOOK – VISUALLY.

☐ 29. ARE ALL COUPLING GUARDS IN PLACE?

ITEM NO.	CONDITIONS NEEDING CORRECTION OR COMMENTS:

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CRANE INSPECTION REPORT

A. You come to work on May 23, 1993 on the day shift. You fill out the inspection report, checking the items where you find a problem.

You find out that there is a problem with a bridge light that is out. Also your oil drip pan is full. Please check those items and then comment on the lines below. Be sure to write the item number and the comments in the correct spaces.

B. You come to work on July 8, 1993 on the midnight shift. You go through the inspection report, checking the items where you find a problem.

You find ou that you have two problems. A hoist cable is tangled and you have a broken mirror. Please check those items and then comment on the lines below. Be sure to write the item number and the comments in the correct spaces.

C. You work August 5, 1993 on the 3 to 11 shift. You fill out the inspection report, checking the items where you find a problem.

You think you may have a problem with the brakes which seem to be faulty. Please check this item and then comment on the lines below. Be sure to write the item number and the comments in the correct spaces. *Will you work on this crane and hope the mechanic will work on it later?*

Module 6 — Supplementary Materials

In most custom-designed curricula, supplementary materials play a very important role. Custom-designing normally takes too much time for a whole course to be designed from scratch, therefore carefully chosen pre-existing materials will be vital to provide extra practice at needed skills. Such materials are often in book form, but many computer-based learning packages—a format few programs have the resources to develop themselves—are also available.

A great deal of material of relevance to workplace literacy has been published in the area of adult education, covering such topics as basic reading, writing and math. Selections from such materials can be used, for example, to supplement job-related instruction in memo writing or measuring with fractions. In addition, materials for vocational, professional and technical education may be found that relate more specifically to a particular workplace situation. The most important criterion in choosing any such materials is that they fit within the instructional framework determined by a program's goals.

Sources of ideas for supplementary materials include bookstores and the catalogs of book publishers, and public and college libraries. There are also literacy centers and agencies in many areas, which can provide both materials and lists of other sources. A new and rapidly-growing resource is the Internet or World Wide Web, from which anyone can download items that interest them and to which new materials are being added daily. Also available electronically (through libraries and now on the Internet —see reference list below) is the ERIC system, a clearinghouse of educational publications, which contains many reports on workplace programs, often including detailed curriculum plans and materials.

With such a wealth of resources available, it is possible to find good and relevant materials on almost any topic. The main problem for a workplace provider is selection—which of these many resources will be most appropriate for my program? As guidance in making this selection, the following list of criteria may be of assistance:

- relevance: does the material promote and support program goals?
- intended use: do the purpose and audience of the material match your program?
- coverage: does the material treat the topics that you need?
- method: are the teaching method and style consistent with that of your program?
- reading level: is the material written at a suitable level for your learners?
- price: will the extent and value of your use of the materials justify the price you will pay?

Using these criteria can be done either formally by rating different materials on each criterion in order to compare them, or simply by keeping the criteria in mind whenever you look at possible supplementary materials.

Now read pp. 19-21 of Drew & Mikulecky (1988), and look again at pp. 42-43 in Chapter 3 of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to consult some of the items listed in Workplace Literacy Resources (National Center on Adult Literacy, 1995—see Module 2), and look at the ERIC documents whose abstracts are included in the Introduction to Modules 3-8. You should also find it useful to browse the World Wide Web, possibly starting at the sites listed below. Then use the example practice exercise to help you complete the assigned practice exercise for Module 6.

References

Drew, R., & Mikulecky, L. (1988). *How to gather and develop job specific literacy materials for basic skills instruction.* Bloomington, IN: Office of Education and Training Resources, School of Education, Indiana University. (ERIC Document Reproduction Service No. ED 297 160)

National Center on Adult Literacy. (1995). *Workplace Literacy Resources,* from Participant Packet for "What works?: Literacy training in the workplace" videoconference, April 13, 1995. (pp. 11-24)

World Wide Web sites (a small sample):

- AskERIC — http://ericir.syr.edu (Virtual Library, ERIC database and digests, lesson plans);
- Center on Education and Work — http://www.cew.wisc.edu/ (partnerships, curriculum, assessment);
- National Center on Adult Literacy — http://litserver.literacy.upenn.edu/ (research, resources);
- National Institute for Literacy — http://novel.nifl.gov/ (information, forums, resources);
- North Central Regional Educational Laboratory — http://www.ncrel.org/ncrel/ (resources, state information);
- U.S. Department of Education — http://www.ed.gov/ (initiatives, funding, services, publications).

List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 6 — Supplementary Materials

Example practice exercise for Module 6

EXAMPLE PRACTICE EXERCISE FOR MODULE 6

MODULE 6 — SUPPLEMENTARY MATERIALS

Review two items from the publicly-available materials on a workplace topic, making recommendations for the use of other teachers. These could be commercially-produced textbooks, curriculum materials entered into the ERIC database system, or materials available on the Internet. Include an annotated list of items and your judgements on their relevance, intended use, coverage of material, instructional method, reading level, and price.

Example practice exercise

Supplementary Materials on Teaching Reading for ESL employees

Firsten, R. (1991). Real-Life English: Grammar. Steck-Vaughn: Austin, TX.

This four-part series of books teaches basic grammar to ESL students. It is structured similarly to a primary school book. The illustrations and sentences are written for adults, however, the series as a whole seems very childish. I would not use this series in a workplace because its focus is not on work or life-related skills. Although many ABE programs use this or similar series, the skills are taught in isolation, and therefore, are not easily transferred to the workplace.

Price — $5.75

Reading Level — Series ranges from beginning to intermediate

Smith, J. H., & Ringel, H. (1991). The Working Experience. New Readers Press: Syracuse, NY.

This series of three texts is written to teach ESL students about different aspects of work. The stories used have been developed from stories written or told by ESL students. Each story will help students develop vocabulary and word analysis skills, expand reading and comprehension skills, and reinforce basic grammar patterns.

This series is very appropriate for the workplace. It is designed to teach students at a variety of levels and helps explain important workplace issues, such as teamwork and punctuality. It is very appealing to ESL students because the stories are written by other ESL students.

Price — $4.50

Reading Level — Ranges from low-beginning to low-intermediate

Example of Application Assignment for Module 6

Supplementary Materials on Teaching Reading to ESL Employees

Beal, K. (1991). Entry to English Literacy: A Real-Life Approach. Steck-Vaughn Company: Austin, TX.

This two-part series is designed to lay the foundation for language and reading acquisition for foreign students by teaching a phonics approach to reading. Phonics is difficult for many adult ESL students. However, this series does a good job explaining phonics. It would be beneficial to use as a supplemental text for students who utilize phonics when reading. It offers clear illustrations and many opportunities for practice.

Price- $6.95
Reading Level- Series ranges from low- to high-beginning

Blot, D. & Davidson, D. M. (1984). Put It In Writing: Writing Activities for Students of ESL. Newbury House Publishers: Cambridge, MA.

This book encourages writing before teaching grammar and structure. The premise is that students learn better when they are editing and revising something that is meaningful to them. Grammar, spelling, and vocabulary activities are provided to follow-up the writing activities. The book contains the following types of activities:

* Semicontrolled Writing to help students develop situations
* Story completion to teach creative writing,
* Model Composition to help with writing paragraphs
* Dialogue Writing to address conflict resolution
* Writing in Response to a Story to provoke thought
* Writing in Response to a Picture to stimulate free writing and inference skills

* The activities and stories in this book are very interesting. It would be an excellent book to use when teaching writing. It encourages student involvement and uses story lines and activities that build on ESL learners native culture.

Price- $6.00
Reading Level- Intermediate

Coffey, M. P. (1986). Fitting In: A Functional/Notional Text for Learners of English. Prentice-Hall: Englewood Cliffs, NJ.

This book is student-centered. It requires minimal instruction from the teacher. Each chapter presents a concept, such as warnings, and then offers a variety of activities to practice and implement what is being taught. Each chapter includes:

* **For a Better Understanding-** This section is where the language concept is introduced.
* **Conversation Practice with a Friend-** These exercises are included to encourage oral practice.
* **Role Plays-** These activities are designed to facilitate use of props and nonverbal gestures.
* **Community Exercises-** The goal of these activities is to give students confidence to use what they have learned in their community.

* This book is a good instructional tool for teaching language because it incorporates a large amount of peer interaction. This is beneficial because it helps reenforce the lessons taught and allows students to gain practice and confidence in their speaking skills.

Price- $11.95
Reading Level- Intermediate

Foley, B. & Pomann, H. (1985). Lifelines. Regents Publishing: New York, NY.

This four-book series features many small-group activities which allow students to work together. It focuses on teaching coping skills and functional language, rather than grammar and vocabulary. Each unit is self-contained, takes about two hours, and allows practice in listening, speaking, reading, and writing. This series utilizes both small group and whole class activities. Whole class activities include:

* **Listen, Read, and Say** is the dialog that introduces the language principles for each unit.
* **Practice, Practice, Practice** is used to introduce new vocabulary.
* **Dictation** is used to reinforce with writing the content which has previously been practiced aloud.

Small group activities include:

* **Partner Exercise** is designed for three students to practice a specific grammatical structure in a controlled interaction.
* **Complete Activities** provide writing practice and encourage the use of cognitive skills.

* **Concentration** is played to practice new vocabulary and to teach discrimination between grammatical structures.
* **Scrambled Sentences** allow practice with word order and subject-verb agreement.
* **Putting It Together** allows students to apply what they have learned to "real-life" situations.

* This series is very good because it teaches life skills, such as finding housing and using transportation, in addition to providing many opportunities for peer interaction and application. It not only helps teach students English, but also teaches them how to cope with their environment.

Price- $5.75
Reading Level- Series ranges from low-beginning to intermediate

Firsten, R. (1991). Real-Life English: Grammar. Steck-Vaughn: Austin, TX.

This four-part series of books teaches basic grammar to ESL students. It is structured similarly to a primary school book. The illustrations and sentences are written for adults, however, the series as a whole seems very childish. I would not use this series in a workplace because its focus is not on work or life-related skills. Although many ABE programs use this or similar series, the skills are taught in isolation, and therefore, are not easily transferred to the workplace.

Price- $5.75
Reading Level- Series ranges from beginning to intermediate

Jolly, J. & Robinson, L. (1988). Real-Life English: A Competency-Based ESL Program for Adults. Steck-Vaughn: Austin, TX.

This four-part series is organized around two areas: (1) **competencies**- what learners need to be able to do with English in real-life situations, and (2) **functions**- how people use language. The vocabulary taught in this series focuses on coping skills. The activities used are reality based. Large and small group interaction are provided throughout the series. The series also provides activities which help students practice their writing skills while learning life skills they can use. Each chapter contains:

* **Unit Opener** to introduce the lesson
* **Talk It Over** to encourage information sharing
* **Word Bank** and **Structure Base** reference pages
* **News For You** news articles

* Write It Down follow-up activities
* One To One listening-speaking activity
* Information which is a real-life document the students fill out and use
* Extension activities for additional practice
* Check Your Competency review

* This series is very current and well written. It teaches a wide range of coping skills, while also providing a multisensory approach to teaching ESL students. It allows for extensive peer interaction and real-life application. The series comes with a teacher's manual, student text, and workbook.

Price- $9.75
Reading Level- Series ranges from low-beginning to intermediate

Keltner, A., Howard, L. & Lee, F. (1985). English for Adult Competency. Prentice-Hall: Englewood Cliffs, NJ.

This two-book series is aimed primarily at developing the listening and speaking skills of adults who have had little or no previous instruction in English. It is designed to teach these learners about the following areas: identification and communication, food and money, health care, transportation, housing, clothing and fabrics, looking for a job, banking and postal services, and community resources. Both books contain:

* Competency Objectives
* Structural Focuses
* Pre-Post Assessments
* Dialogues
* Structure and Vocabulary Practice
* Visuals and Supplemental Activities

* This series is also beneficial in the workplace if there are employees with no English skills. It teaches a wide array of meaningful skills that the employee could use at work as well as at home. It is a wonderful resource for ESL students because it offers information on a wide number of topics, from getting health services and day care to finding a job.

Price- $6.95
Reading Level- No English

Lado, R. (1978). Lado English Series. Regents Publishing: New York, NY.

This reading series is designed to be a complete course in English. It covers six different grade levels, each

containing a textbook, workbook, teacher's manual, and cassettes. This series focuses on the interrelatedness of reading, speaking, understanding, and writing. Each chapter is designed to teach a life-skill, and is divided into the following sections:

* **Conversation** which introduces practical topics and provides a context for the presentation of new material
* **Adaptation** which helps students use questioning statements
* **Study** which presents grammatical points
* **Practice** which gives students time to master the grammar in context
* **Speak** which focuses on using new vocabulary
* **Read** which combines the material presented in the unit with material from previous units
* **Think** which provides an opportunity for the students to be creative with language
* **Pronounce** which focuses on the elements of pronunciation which cause problems in understanding and speaking English

* This series has many good points that make it appropriate for the workplace. It is extensive and can be used to teach a wide range of learners. It is very structured and application-based, therefore, students do not need constant guidance. It provides activities which allow practice in reading silently, reading aloud, writing, and comprehension. It also provides tapes which students can take with them to practice their pronunciation skills.

** This series is still available from the School of Languages and Linguistics at Georgetown University.

Price- $5.95
Reading Level- Ranges from high-beginning to low-advanced

Murphy, P. & Broukal, M. (1993). Introducing the USA: A Cultural Reader. Longman: White Plains, NY.

This beginning reader is designed to introduce information about the USA and to stimulate cross-cultural exchange. It contains twenty-eight units about American people, places, and things. Each unit contains:

* **Prereading Questions** linked to visuals to help focus the topic of each unit
* **Short Reading Passages** which should be introduced by the instructor and then read by the individual
* **Topic-Related Vocabulary Work** designed to help students become more self-reliant
* **Comprehension of Main Ideas and Detail Exercises** to help students develop their reading skills
* **Grammar** that focuses on the aspects of language used in the reading passage

* **Discussion Questions which give the students an opportunity to bring their own knowledge and experiences to the topics discussed.**

* This book is wonderful to use with ESL programs in the workplace if the GED is an ultimate goal of some of the students. It easily explains many historical events and figures which these students should know about. This book is also beneficial because it explains American customs and cultures that are unfamiliar to many ESL students.

Price- $11.95
Reading Level- High-beginning

Smith, J. H. & Ringel, H. (1991). The Working Experience. New Readers Press: Syracuse, NY.

This series of three texts is written to teach ESL students about different aspects of work. The stories used have been developed from stories written or told by ESL students. Each story will help students develop vocabulary and word analysis skills, expand reading and comprehension skills, and reinforce basic grammar patterns.

* This series is very appropriate for the workplace. It is designed to teach students at a variety of levels and helps explain important workplace issues, such as teamwork and punctuality. It is very appealing to ESL students because the stories are written by other ESL students.

Price- $4.50
Reading Level- Ranges from low-beginning to low-intermediate

Tom, A. & McKay, H. (1991). The Card Book. Alemany Press: Englewood Cliffs, NJ.

This book provides 243 duplicatable picture cards, along with specially designed interactive activities, to provide ESL students at all levels with vocabulary practice, conversational and written language practice, and cultural information. The cards are divided into nine sets: food, clothing, tools, road signs, faces, furniture, animals, daily activities, and leisure activities.

The cards can be used in a variety of ways in a workplace setting. At the beginning level, the cards can be used to introduce new vocabulary, to provide examples for spelling and pronunciation practice, and to provide the basis for listening and conversation activities. More advanced ESL students can use the cards in small groups and participate in the following activities:

* **Information Sharing** in which not all participants have the same information
* **Opinion Sharing** which requires that students find out one another's opinions in order to complete a task
* **Problem Solving** which asks students to solve problems by sharing information, suggestions, and opinions.

* This book can be used effectively in the workplace as a supplement to other materials. It provides cheap and easy to duplicate pictures which students can take with them, and it can be used to encourage team work, language development, and fluency.

Price- $19.95
Reading Level- Ranges from low-beginning to advanced

* Indicates materials that I would select from if teaching an ESL workplace program. The materials chosen vary in reading level and skills taught so that materials can be selected to fit a wide variety of learners.

Comments: I initially wanted to include only materials published after 1988. However, after conducting my search for adult ESL materials I found that many books published before this date were still useful for workplace programs. Although I would not use all of the books I included, they are the best currently available. I contacted a few different publishers and literacy programs to check if some of the older materials were still available. Although I did not get information on each series, as a whole, the series included in this bibliography should be avaiable.

Module 7 — Lesson Plans

The designing of customized curriculum and the gathering of supplementary materials, as described in earlier modules, come together when actual classes are being planned and implemented. The variety provided by these two components of instruction needs to be combined with other forms of variety as well. Instruction should include both group and individual work, both teacher-led and learner-focused sessions, and, whenever possible and appropriate, outside speakers to provide expertise and even more variety.

An important factor to keep in mind is that different people learn in different ways, so that learning activities should be varied and adopt multiple approaches to the same skills—both within one class session and across sessions. This will not only accommodate a range of learning styles (see, for example, Diller & Moore, 1994), but also allow reinforcement of skills being learned while avoiding repetitive exercises. For example, the teaching of memo writing could include both visual approaches (reading and writing memos) and aural approaches (direct teacher instruction and group discussion). However, it is important for all learners that the majority of class time be spent in activities—doing a task is a much better way of learning the relevant skills than listening to someone else describing how to do it.

To some extent there are natural sequences of approaches which can vary the learners' classroom experience. A topic is most often introduced by a brief teacher lecture and whole-class discussion. This may be followed by individual or small-group practice of skills, which in turn is rounded off with a feedback and summary session discussing what has been learned. However, this sequence can itself become too predictable and needs varying. Some lessons could start, for instance, with an individual exercise to activate prior knowledge, or with class presentations by learners of materials they have gathered since the last session. The key here is to combine a predictable framework that learners can become accustomed to and feel comfortable in, with enough variation to keep them interested and motivated.

Another variable in the lesson plan mix is the content. The core of any job-related course is custom-designed curriculum, in which learners practice actual job skills with real job materials. But it is not necessary to do this all the time. A recent study (Mikulecky & Lloyd, 1996) indicates that courses spending at least 30% of the time on job-related materials produce substantial learner gains in workplace reading skills and that gains do not increase significantly with larger proportions of job-related instruction. In fact, spending all of class time with job materials may be counter-productive. If learners feel that their employers needs are being met, while their own personal needs are ignored, then motivation is likely to decrease and the success of the class will be at risk. A more cooperative approach involves a mixture of job-centered and learner-centered instruction, in which everyday materials (often brought to class by the learners) are used in conjunction with similar job-related materials. For example, filling out forms is an important part of many jobs and also of everyday life. A job order form and a mail-order catalog form could both be used to practice the relevant skills.

This issue of skills practice relates to the issue of time. Most workplace classes are brief (20-30 hours) and it is difficult to provide sufficient opportunity during lesson times for learners to practice as much as might be desirable. The use of job materials in class allows learners to return to their jobs and practice the skills they are learning. Similarly, the use of related everyday materials gives learners the additional opportunity to practice away from the workplace. This extra practice time can be vital in raising skill levels and also

encourages learners to perform tasks independently after receiving support and gaining confidence during class.

Lack of confidence is, in fact, a problem for many workplace learners. Typically, they left school 10 or 20 years ago and do not remember it with affection. Therefore workplace program providers have a barrier to overcome in this area and need to build into their teaching large measures of praise and encouragement, particularly in the first sessions of a course. In addition, to promote a change of attitude among learners toward continuing education and life-long learning, it is very helpful to conduct short class discussions every week or so on their developing beliefs about themselves as learners and on their future plans for education. Such discussions have been shown (Mikulecky & Lloyd, 1996) to produce changes in these beliefs and plans, and also to improve skill performance as learners gain in confidence.

In summary, workplace program classes should incorporate many kinds of variety, both in content and presentation:

- custom-designed and supplementary material,
- teacher-prepared material and learner-provided material,
- job-related material and everyday life skills material,
- teacher-led discussions and learner activities,
- both group and individual practice of skills,
- usual class teacher and outside experts,
- in-class skills practice and further practice at home and on the job.

Now read the article in this module:

- Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum."

You may also want to look at the ERIC documents whose abstracts are included in the module (as well as others in the Introduction to Modules 3-8). Then use the example practice exercise to help you complete the assigned practice exercise for Module 7.

References

Diller, J., & Moore, R. (1994). *Learning to learn: What's your working style?* Denver, CO: Colorado State Community College and Occupational Educational System. (ERIC Document Reproduction Service No. ED 380 651)

Mikulecky, L. & Lloyd, P. (1996). *Evaluation of Workplace Literacy Programs: A Profile of Effective Instructional Practices.* Philadelphia, PA: National Center on Adult Literacy, University of Pennsylvania.

Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc., pp. 237-261. (ERIC Document Reproduction Service No. ED 333 180)

List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 7— Lesson Plans

Philippi, J. (1991). "How to design instruction: From literacy task analysis to curriculum." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc. (ERIC Document Reproduction Service No. ED 333 180)

pp. 237-261

ERIC abstracts for ED 380 651, ED 354 395

Example practice exercise for Module 7

EXAMPLE PRACTICE EXERCISE FOR MODULE 7

MODULE 7 — LESSON PLANS

Plan the outline of 10 hours of instruction for the workplace literacy topic "Statistical Process Control" described below. Set out an overview of your plan, including objectives, materials and activities connected with your teaching. (You do not need to produce the materials—just describe what they would be.)

Statistical Process Control

A machine tool factory is planning to monitor its production with Statistical Process Control. All workers will need to be able to sample their machine's production, record the values, calculate averages, plot graphs, and decide whether to reset their machine based on the results.

Example practice exercise

Objectives:

To understand the overall method and purpose of SPC, to measure and record values to two decimal places, to calculate averages accurately, to plot points accurately, to recognize and act on graphical trends.

Plan for 5 two-hour lessons:

Lesson 1

Materials: several SPC charts (some completed); large cardboard number line showing two decimal places; production gauges; supplementary textbooks for extra practice with decimals.

Activities: introduction to company's need for SPC (from production manager) and overview of SPC process (from quality inspector), followed by questions from class; review of decimals (using number line) and small group practice of reading decimals from gauges. Homework (optional): textbook exercises on decimals.

Lesson 2

Materials: worksheets on calculating averages (some job-related, others everyday); large cardboard number line showing two decimal places; production gauges; real SPC forms; supplementary textbooks for extra practice with averages.

Activities: class discussion on use of averages; individual and small group work on averages worksheets; brief recap of reading decimals from gauges; calculating averages from gauge readings (including filling out real SPC forms). Homework (optional): textbook exercises on averages.

Lesson 3

Materials: graphs and charts from newspapers (gathered by class); graph reading worksheet (recording subject, axis labels, sample value pairs); graph plotting worksheet (from given axes and table of value pairs); several completed SPC charts and those from Lesson 2 with averages only; supplementary textbooks for extra practice with graphs.

Activities: class discussion of newspaper graphs and charts, concentrating on structure (subject, axis labeling, reading value pairs); individual work on graph reading worksheet,

followed by small group checking of results; teacher-led session on plotting points and drawing graphs; individual work on graph plotting worksheet, followed by small group checking of results; class discussion of plotting for SPC charts, followed by practice with those from Lesson 2. Homework (optional): textbook exercises on graphs.

Lesson 4

Materials: graphs and charts from newspapers (as for Lesson 3, plus more examples gathered by class); several completed SPC charts and those from Lesson 3 with graphs drawn.

Activities: class discussion of newspaper graphs and charts, concentrating on meaning and trends; small group work discussing and writing about meaning and trends, moving from familiar graphs to unfamiliar; class presentations by small groups, explaining graphs they have analyzed; small group analysis of SPC charts from Lesson 3, followed by class discussion of on-the-job decisions, actions and consequences.

Lesson 5

Materials: production gauges; real SPC forms.

Activities: whole process of carrying out SPC on the production line—reading gauges, recording values, calculating averages, drawing graphs, making decisions; example modeled by teacher, small group work, then individual work, followed by class discussion of analyses; production manager (or quality inspector) returns to discuss effect of SPC on production and the company.

BLUEPRINT READING
Course Overview

One of the basic skill deficits identified in the task analysis is blueprint reading. This introductory course in blueprint reading has a number of objectives fundamental to successful completion of this task, listed below.

The course is designed to take two hours per week for 10-12 weeks. It will take place in the shop training room. It will be offered on a voluntary basis to up to three people willing to commit to all sessions on a shared time basis (one hour paid time, one hour personal time).

OBJECTIVES:

1. Demonstrate familiarity with manufacturing terminology as applied to blueprints.

2. Demonstrate a knowledge of selected graphic symbols, notation.

3. Demonstrate an understanding of how tolerances and surface finishes reflect on or help determine key characteristics.

4. Identify on a drawing which are the key characteristics and locate them on the actual part.

5. Demonstrate an understanding of the relationship of views on a drawing to a three-dimensional object.

6. Read selected dimensions and tolerances from the drawing.

7. Locate information in the Title Block of the blueprint.

8. Show how a process drawing relates to the blueprint.

9. Demonstrate familiarity with use of blueprint information on various forms in the workplace.

Time	Objectives	Material	Possible Activities/Methods
Section I - Background:			
2 hrs (1 sess.)	Overview	Introduction (what is going to be covered) and overview, including "why" of blueprints and blueprint reading, graphic language.	Visual aids-film or video. Discussion. Questions and answers on expectations by class.
	Views	Review of geometric shapes and terms as applied to viewing objects.	Review shapes: models, handouts, identify shapes on objects in room.
	Terminology	Review of manufacturing terminology as applied to blueprints.	Lecture/discussion. Assessment and feedback.
Section II - Format and Views:			
6 hrs (3 sess.)	Title Block	Format of a drawing, including Title Block and other information blocks.	Demonstration/discussion with blueprint examples.

Time	Objectives	Material	Possible Activities/Methods
	Views	Basic views - top, front, end. American and European versions.	Demonstration Let them handle parts, show views. Folding screen or plexiglass boxes with various objects inside; trace object with chalk then open to see. Missing line exercises, increasing in difficulty.
	Views	Auxilliary views - true projections of angled details, including why needed.	Examples - drawings and matching parts. Select correct projection exercises.
	Views	Sectional views - true pictures of inside details.	Examples - drawings and matching parts. Select correct projection exercises. Match drawings to parts and tell why they selected. Easy to hard. (Assessment and feedback)

Time	Objectives	Material	Possible Activities/Methods
Section III - Dimensioning and Tolerancing:			
12 hrs. (6 sess.)	Dimensions Notations Key char. Terminology	Fundamental rules. Units of measurement. Descriptions of lines. Descriptions of characteristics. Methods and considrations in tolerancing. 13 symbols (GDT). Use of notes versus symbols (Traditional). 10 modifying symbols. Datum referencing. Surface finishes	Each segment will include lecture or demonstration with examples, discussion. Handouts, exercises. Assessment and feedback before moving on.
	Process drawings	Process drawings and how they differ.	Examples of both for same part. Exercises. Assessment and feedback.

Time	Objectives	Material	Possible Activities/Methods
Section IV - Transfer and Follow Up:			
2 hrs (1 sess.)	Forms	How the blueprint information relates to the form.	Practice with form, using blueprint. Questions and answers.
	Form, key char.	How the blueprint information influences organization of material on the form. Other forms and processes that depend on blueprint information.	Assessment and feedback.
After Class		Scheduled opportunities to practice skills with ~~Paul~~ quality inspector.	

Module 8 — Evaluation

Evaluation is a critical part of establishing a successful workplace literacy program. The purpose of evaluating a program is to assess how effectively the needs of various stakeholders are being met. A thorough evaluation can document a program's successes and point out areas that need improvement. There are two main types of evaluation: formative and summative. A formative evaluation is conducted while a program is in progress in order to point up areas of achievement and to detect potential problems. A summative evaluation assesses the overall effectiveness of the program in achieving its goals.

In a formative evaluation, interviews with all stakeholders (e.g., providers, learners, managers, supervisors, employee representatives) are used to determine if there is agreement about the program's goals, resources, instruction and impact. One question, for example, will ask interviewees what they see as the most important goals of the program. Analysis of the responses will show whether all groups are agreed on the program's goals and their priorities. If there are major disagreements, all parties need to know about them and to find ways of resolving the differences, so that the program can proceed smoothly and cooperatively.

Other questions in a formative evaluation will relate program goals to the resources, instruction and impact of the program. For instance, classroom resources may be inadequate or instructional methods unsuitable for achieving agreed important program goals. Or the impact of early classes on job performance may be less than anticipated. In all such cases, a formative evaluation report will tell the stakeholders what is working well and what is not, and suggest ways of solving those problems before they jeopardize the success of the program.

A summative evaluation documents a program's success in reaching its goals. It uses assessments that measure the extent of learner achievement and increases in job productivity. These assessments should be chosen to match program goals and instructional practices. When an effective evaluation is based on learning objectives and jobs, it can also serve as the basis for continued funding.

Evaluation should be based on the achievement of goals as measured by assessments of learners both before and after instruction. A variety of measures should be used to assess the program's impact. Program goals may include attaining gains in literacy ability, improving job productivity, and involving learners in literacy activities at home and with family. Custom-designed assessments, standardized tests, company records, ratings of employee performance by supervisors—and other less formal measures such as surveys and interviews—can all contribute to evaluating the impact of a workplace literacy program. Thus, for example, using multiple measures such as job-related scenarios, company records and supervisor ratings to assess a goal related to increasing productivity will ensure that the program's total impact is clearly demonstrated.

Custom-designed assessments. As curriculum is being designed, assessments should be developed than can be used as pre- and post-measures to determine the extent of gains as a result of instruction. The assessments should reflect as closely as possible the objectives of the lessons being taught, and be relevant to both teaching and jobs. Preferably, the same assessment should be used both pre and post. This will allow the average scores to be compared for a group of learners to determine the extent of learning that took place. For

example, a scenario based on skills taught in a course on completing job-related forms can be used to assess mastery of that skill.

Standardized tests. Using standardized tests can provide two benefits to a program. First, the test can be used to measure learners' current ability levels. The Test of Adult Basic Education is often used, but it is less useful to a workplace literacy program than tests that use more realistic tasks such as the CASAS Life Skills Assessment or the Test of Applied Literacy Skills. As with custom-designed measures, pre- and post-test results can be compared to assess the extent of learner gains. Unlike custom-designed measures, however, standardized test results will show the greatest improvement when post-tests are administered after a longer instructional time (i.e., 100 hours or more). This is because standardized tests measure more general literacy skills, and significant gains in general literacy will not usually occur as a result of participating in one or two brief courses.

Company records. Another method of evaluating a program's impact is examining company records, which can reveal a program's impact on job productivity. Records on individual employees (e.g., customer complaints, attendance, tardiness) should be used. However, as with other methods of assessment, the results will only show meaningful improvement if learners are tested after they have completed 20-50 hours of instruction. While individual records can sometimes be difficult to locate, they may show an improvement in an organization's productivity or even perhaps a cost savings due to improved attendance, decreased errors, fewer customer complaints, or improvements in other problems.

Supervisor ratings. Another method of assessing impact on productivity is supervisor ratings of job performance. Supervisor ratings are a series of anchored rating scales that are custom-designed to suit a particular workplace. In this method, program designers should meet with supervisors to discuss which aspects of job performance should be rated and to describe job behaviors. Scales are then developed which include descriptions of top, bottom and average behaviors for each aspect of job performance being rated. When used as pre- and post-assessments, these custom-designed ratings can measure the extent of perceived improvement in job performance.

Less formal measures. In addition to the measures discussed above, less formal interviews and surveys can also be used to measure a program's impact. For example, individual and small-group interviews with supervisors or other stakeholders can be used to learn their opinions of program effectiveness. Surveys can be taken that ask learners for their opinions of course content and its relevance to their jobs and outside interests. Although they are not as specific as pre- and post-assessments, these methods can still provide valuable insight into the perceived effectiveness of a workplace literacy program.

Timing of assessments. The timing of assessments is also important. The results will be more meaningful if learners are tested after 20-50 hours of instruction, so that enough time has elapsed for learners to make measurable progress. Using any of these assessments after learners have completed fewer than 20 hours of instruction is not likely to show learning gains.

To summarize, assessments should be designed to match instruction and to measure achievement of program goals. They should be used as pre- and post-measures to evaluate the extent of learner achievement. Standardized tests can also be used to assess gains in general literacy ability as a result of long-term instruction. Company records and supervisor ratings can measure the program's impact on job productivity. Finally, more informal measures such as interviews and opinion surveys will also reveal information about the perceived contribution a program is making to an organization.

Now read the articles in this module:

- Taylor, M. C. (1991). "How to Approach Worker Testing and Assessment "
- Handbook of ideas for evaluating workplace training programs.

Read also Chapter 4 (pp. 49-64) of the Handbook (Mikulecky, Lloyd, Kirkley & Oelker, 1996). You may also want to look at the ERIC documents whose abstracts are included in the module (as well as others in the Introduction to Modules 3-8). Then use the example practice exercise to help you complete the assigned practice exercise for Module 8.

References

Taylor, M. C. (1991). "How to Approach Worker Testing and Assessment ." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc., pp. 183-202. (ERIC Document Reproduction Service No. ED 333 180)

List of source materials

Distance Education:
Developing Workplace Literacy Programs

Module 8 — Evaluation

Taylor, M. C. (1991). "How to Approach Worker Testing and Assessment." In Taylor, M. C., Lewe, G. R. & Draper, J. A. (Eds). *Basic skills for the workplace*. Toronto, Ontario: Culture Concepts, Inc. (ERIC Document Reproduction Service No. ED 333 180)

pp. 183-202

Handbook of ideas for evaluating workplace training programs.

22 pp.

ERIC abstracts for ED 373 593, ED 354 361

Example practice exercise for Module 8

EXAMPLE PRACTICE EXERCISE FOR MODULE 8

MODULE 8 — EVALUATION

Develop a set of 3 job-related scenario questions for the workplace document "OSHA Card" shown over the page. You should write one factual, one inference and one application question, and supply model answers for the questions.

Example practice exercise

OSHA CARD Job-related Scenario

The government has safety regulations and special labels in many workplaces. I am going to show you a safety card that many employees in America must keep in their pockets while working. This card shows how to understand safety labels.

Now go ahead and read the article. *(Interviewer, wait while learner reads article.)*

Now I am going to ask you some questions about the card.

1. (factual question)
   What should you do when you see the letter "X"?
   (Answer: Ask my supervisor. *Directly explained in the text*)

2. (inference question)
   What is the most common type of protection from "A" to "K"?
   (Answer: gloves. *Requires the interviewee to look through several parts of the text and then to generalize the information*)

3. (application question)
   If a supervisor says you are about to do a job that requires sanding, which protective items would you choose?
   (Answer: safety glasses and a dust respirator. Optional: gloves, combination dust/vapor respirator and a face shield. *Requires the interviewee to interpret the information on the card and to relate it to a real-life situation.*)

Hazardous Materials Identification System

HAZARD INDEX

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3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard

0 Minimal Hazard

• An asterisk (*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification.

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AMERICAN LABELMARK, Chicago, IL 60648 NC-EC

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K

X Ask your supervisor for specialized handling directions

Safety Glasses
Splash Goggles
Face Shield
Arline Hood or Mask
Gloves
Synthetic Apron
Dust Respirator
Vapor Respirator
Combination Dust & Vapor Respirator
Full Protective Suit
Boots

* 1981 National Paint & Coatings Association

Handbook

of Ideas for Evaluating

Workplace Training Programs

Contents

Introduction 3

Employee skill and competency tests 5

Employee behavior and attitude measures 9

Employee job performance ratings 16

Employee productivity indicators 21

Introduction

This handbook provides guidelines for designing evaluation materials and for conducting the evaluation of your workplace training program. The purpose of a program evaluation is to find out whether your program is working effectively in achieving its goals. Program goals may include making employees better at their jobs, increasing employees' general education level, or raising employee morale and self-esteem.

Whatever those goals may be, a program evaluation aims to find out whether the funding allocated to your training program is money well spent.

Because of this commitment of scarce resources, it is worth taking a little trouble to find out what your training program has achieved. In order to do that, you need to evaluate the things this program was aiming to teach. That means some custom-designing of the evaluation instruments, so that the measures you use are able to show the improvements made by your program.

For example, if your training program concentrates on teaching Statistical Process Control, then the best ways to measure the effectiveness of the program are by testing employees with scenario situations based on SPC skills, and by asking their supervisors to rate their ability to carry out SPC on the job. For this class, it does not make sense to use, for example, a standardized test — which tests general ability — because it does not necessarily relate to the ideas taught in the class, and employees are likely to show minimal or no gains on such a test.

Mention of "gains" brings us to another important point in program evaluation: what level were the employees at before the program? In order to measure what the program has achieved, you need to be able to compare a pre-class assessment with a post-class assessment. So, in the sections that follow, keep in mind that the evaluation instruments will need to be used twice — before and after the program. It is essential that you use the same set of instruments in both assessments, so that you can compare them to see what your program has achieved.

To give you some ideas for ways to evaluate your training program, this handbook includes four types of evaluation instruments, which are described briefly on the next page and explained in more detail in the rest of the handbook.

Employee skill and competency tests

This section provides examples of the types of instruments you could use to assess the level of improvement in the job-related skills and competencies of employees enrolled in your program. These instruments often need to be developed using job-related materials from your organization, so that you have a true test of the effectiveness of your program. In some industries, publishers have developed tests directly related to industry skills. These may be used if local tasks match the commercial tests.

Employee behavior and attitude measures

Some programs include goals related to long-term changes in employee behaviors and attitudes: for example, to increase employee reading of safety materials, or to improve employee confidence and belief in themselves. Such goals are best assessed through questionnaires and interviews, given to employees both before and after training, in order to measure gains achieved by your program.

Employee job performance ratings

In addition to direct testing of employee gains in skills and competencies, you will probably want to know how successfully they can apply their new knowledge back on the job. To find this out, the best way is to develop job performance rating scales in key areas, and ask supervisors (or others who are aware of individual performance) to rate the employees both before and after the training program.

Employee productivity indicators

Besides measuring improvement in job-specific skills, you may also want to look for indications of an increase in worker productivity, or improvements in other areas such as attendance and safety. For this, your organization probably already keeps the records you need, but you should check that they are available in a form that you can use to evaluate the employees in your program.

Employee skill and competency tests

This section gives examples of the types of instruments you could use to assess the level of improvement in the job-related skills and competencies of employees enrolled in your program. These instruments often need to be developed using job-related materials from your organization, so that you have a true test of the effectiveness of your program.

You want to know how well employees use material from your particular workplace, so you should select key items related to your own program's goals, such as:

- a company newsletter
- a key graph or chart
- an instruction sheet
- a page from a manual

Using this material, develop a scenario of realistic questions and tasks, to test the employees' understanding of how to use the material on the job. In order to address a wide range of abilities, choose questions that range from plain factual (the answer can be found in the material) to those requiring inference and application (the employee must make use of the information found).

The following pages contain a detailed example of such a scenario, with six questions ranging from the simple factual to harder application. (Of course, in your own scenario, you will leave out these descriptions — and the answers.)

If there is time to do so, it is well worth conducting this test as an interview with each employee in training. You are more likely to obtain an accurate measure of the employees' ability to carry out the scenario tasks, if they do not have the added complication of reading the questions and writing down their own answers. Whichever way you decide, **remember that the pre-test and post-test must be conducted in the same way** — so that you can make a fair comparison between them when assessing the success of your program.

INSTRUMENT EXAMPLE: JOB-RELATED SCENARIO

OSHA CARD

The government has safety regulations and special labels in many workplaces. Here is a safety card that many employees in America must keep in their pockets while working. This card shows how to understand safety labels.

1. (easy factual question)
   What should you do when you see the letter "X"?
   (Answer: Ask my supervisor. *Directly explained in the text.)*

2. (harder factual question)
   What do all the symbols in "K" stand for?
   (Answer: Airline hood or mask, gloves, a suit and boots.
   Answers are in the text, but are more difficult to find.)

3. (easy inference)
   What is the most common type of protection from "A" to "K"?
   (Answer: Gloves. *Requires the employee to look through several parts of the text and then to generalize the information.)*

4. (harder inference)
Write down all the letters which refer to severe hazards. How did you tell this?
(Answer: F. H. J. K. Top of the table says "4 severe hazard": 4 probably means 4 pictures. These letters have 4 pictures. *Requires the employee to make deductions between different parts of the card.)*

5. (harder application)
If a supervisor says you are about to do a job that requires sanding, which protective items would you choose?
(Answer: Safety glasses and a dust respirator. Optional: gloves, combination dust/vapor respirator and a face shield. *Requires the employee to interpret the information on the card and to relate it to a real-life situation.)*

6. (easy application question to end the scenario)
Give two examples of how you or someone you know could use this card.
(Answer: Must give 2 examples and list protections. *This is more open-ended and allows the employee to contribute based on his/her job background.)*

Hazardous Materials Identification System

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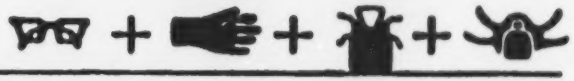
F 

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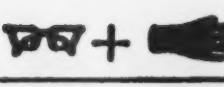
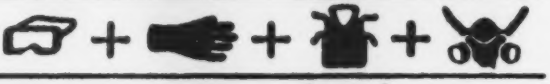
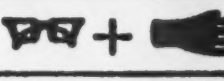
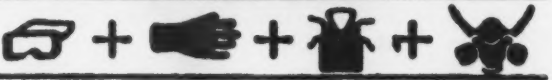
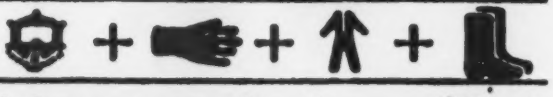
G 

H 

I 

J 

K 

X Ask your supervisor for specialized handling directions

* 1981 National Paint & Coatings Association

Attendance & punctuality

Sometimes training makes people want to come to work more often. Some programs have been able to demonstrate a positive impact on work attendance as a result. For this reason, it is useful to gather attendance information for both classes and work. Because absenteeism is usually infrequent, however, program impact can be influenced greatly by a single individual with many absences or by legitimate absences which influence everybody (i.e., health during flu season). For this reason, interpretation of attendance data must be done very carefully. Similar care must be taken with punctuality data — especially when only a small number of employees is involved.

Safety

In most industries, safety is a major concern for both employers and employees. Training classes often address safety issues and some programs directly support these efforts. It is difficult to demonstrate impact on safety, however, unless one collects information on large numbers of workers for a relatively long period of time before and after training.

Suggestion Forms

Most companies have suggestion boxes for collecting employee productivity and safety ideas. Employees are often more willing to express their opinions as they become more competent with reading and writing, and have experience writing suggestions forms. Some businesses also keep track of the dollar value of accepted suggestions.

Retention & promotion

Workplace training programs directly designed to support promotion or retention of employees during times of job restructuring are most likely to demonstrate impact. To determine impact, it is important to compare learners receiving training to comparable groups who did not receive training. In addition many companies have tests to determine promotion qualification. Comparing scores of program participants to other test takers or to the participants' own earlier test scores can assess impact on promotion. Similar patterns are possible in assessing who is retained during employer downsizing.

Employee behavior and attitude measures

Some programs include goals related to long-term changes in employee behaviors and attitudes: for example, to increase employee participation in team processes, or to improve employee confidence and belief in themselves. Such goals can be assessed through questionnaires and interviews, given to employees both before and after training, in order to measure gains achieved by your program.

On the following pages, there are examples of the types of questionnaires and interviews you could use to assess employee behaviors and attitudes in your workplace. The examples relate to a workplace program designed to improve employee literacy. The questionnaire and interview overlap somewhat to better ensure that you can gather accurate information.

Questionnaire: assesses employee practices at work — employees are asked how often they read workplace materials (e.g., manuals, memos, etc.), as well as about their participation in job-related activities.

Interview: asks employees about their practices, beliefs and plans in relation to work and training.

In the questionnaire (on pages 10-12), many of the questions should apply to most industries and thus need no changes. However, items 7 - 10 (for example) may not be relevant to your organization. These items should be replaced by key site-specific reading materials, such as warning labels, parts or product lists, production quotas, department inventories, etc. Actual names may differ from site to site. Select items most employees are likely to use up to 10 times in 7 days, so that their responses will register on the given scale. Above all, select items important for your workplace.

The questionnaire can be administered to a whole class at once. The questions could be read to learners who are unable to read them for themselves. But **remember that the pre-assessment and post-assessment must be conducted in the same way** — so that you can make a fair comparison between them when measuring the success of your program.

The interview questions (on page 14) are open-ended, and so may be suitable for any workplace. The interview should be conducted one-on-one with each employee. Guidelines for conducting the interview are given on page 13.

INSTRUMENT EXAMPLE: EMPLOYEE QUESTIONNAIRE

Name _____ Date _____

Please ***check*** the number of times you have done the following:

1. **In the last 7 days** how many times have you read a company newsletter or bulletin board?

0 1 2 3 4 5 6 7 8 9 10+

2. In the last 7 days how many times have you used a manual?

0 1 2 3 4 5 6 7 8 9 10+

3. In the last 7 days how many times have you read a memo or letter?

0 1 2 3 4 5 6 7 8 9 10+

4. In the last 7 days how many times have you used a graph or chart?

0 1 2 3 4 5 6 7 8 9 10+

5. In the last 7 days how many times have you used an instruction sheet?

0 1 2 3 4 5 6 7 8 9 10+

Questionnaire (cont.)

6. In the last 7 days how many times have you written a note to a co-worker?

0 1 2 3 4 5 6 7 8 9 10+

7. In the last 7 days how many times have you used *a job order form* ?

0 1 2 3 4 5 6 7 8 9 10+

8. In the last 7 days how many times have you used *a route sheet* ?

0 1 2 3 4 5 6 7 8 9 10+

9. In the last 7 days how many times have you used a *computer screen* ?

0 1 2 3 4 5 6 7 8 9 10+

10. In the last 7 days how many times have you used *a blueprint* ?

0 1 2 3 4 5 6 7 8 9 10+

Questionnaire (cont.)

11. How often do you have difficulties with the paperwork in your job?

___ never ___ occasionally ___ often ___ always

12. How often do you wait for others to talk about written information, just to be sure what is in it?

___ never ___ occasionally ___ often ___ always

13. How often do you have trouble reading paperwork from management?

___ never ___ occasionally ___ often ___ always

14. When a problem arises, how often do you look for printed directions to help figure out what to do?

___ never ___ occasionally ___ often ___ always

15. How often are you able to help when someone has trouble reading something?

___ never ___ occasionally ___ often ___ always

16. How often do you talk in team or department meetings, asking questions or sharing ideas?

___ never ___ occasionally ___ often ___ always

17. How often are your ideas discussed in team or department meetings?

___ never ___ occasionally ___ often ___ always

Guidelines for Conducting Interviews

The employee interview addresses employees' practices, beliefs, and plans related to workplace activities. Appropriate skills for conducting interviews are required to elicit responses from the participants. Here are some points to keep in mind.

Instructions

- Read questions clearly to the employee.
- Repeat questions if necessary.
- Make notes on the responses in as much detail as possible.
- Share what you have written to confirm responses.

Prompting

Prompting is used when employees stop after a single response. For example, while asking the employees the sorts of things they read and write, you can prompt them to give several examples.

- Read the question and then the standard prompt(s) to all employees (e.g., "Can you give me more examples?").
- Avoid overguidance, such as suggesting possible responses.
- Avoid personal interpretation and comments.
- Keep a neutral tone.

The example that follows was developed for a workplace literacy program. Some questions will need to be modified for other types of workplace training program.

INSTRUMENT EXAMPLE: EMPLOYEE INTERVIEW

Interviewee _____ Date _____

I'd like to ask you some questions about reading, writing, and education. The answers to these questions will give us an idea of how you see reading, writing and education in connection with your job.

Practices

Tell me the sorts of things you read and write on the job during a normal week.

(*For probe, ask: "Can you give me more examples?"*)

Beliefs

How good do you consider yourself to be at reading and writing? What makes you think so?

Plans

Now I'd like to ask you about your plans. Explain how you see reading and education as part of these plans.

A. What are your plans for the next year?

B. What are your plans for the next 5 Years?

Guidelines for Scoring Interview Responses

The employee interview will result in a set of interviewer's notes for each employee. In order to measure improvements produced by your program, you need some method of comparing the pre-test and post-test responses. Described below are scoring schemes for each of the areas: practices, beliefs and plans.

Practices

1. Count the number of items given in each response, and compare pre- and post-test results.

2. Make a **holistic comparison*** (see below) between pre- and post-responses. Make holistic judgments according to the following criteria: **breadth, frequency and difficulty** of practices mentioned.

Beliefs

1. Rate the self-appraisal, if the learner has made one, on a scale of 1 - 5 (i.e., 1 = poor, 3 = average, 5 = good, using 2 and 4 as needed).

2. Make a **holistic comparison*** between pre- and post-responses. Make holistic judgments according to the following criteria: the reasons given for the reported self-image, in terms of **abilities, activities and interests**.

Plans

For both parts (one year and five years), make a **holistic comparison*** between pre- and post-responses. Make holistic judgments according to the following criteria: the **clarity, definiteness and detail** of the plans mentioned.

* **Making holistic comparisons**

  - Read the pre-response and then the post-response.

  - Decide if the post-response is better or worse than, or about the same as, the pre-response.

  - Record changes as follows:
    "+" = better response
    "-" = worse response
    "0" = response about the same (use this one if in doubt).

Employee Job Performance Ratings

When all learners in a class have similar jobs or have the same supervisor or team leader, a set of shared job performance ratings can be developed to measure productivity. Supervisors or team leaders often have direct knowledge of employees' job performance, so it is best to develop these ratings with them. To assess the impact of training on the employees, these ratings should be used as pre- and post-indicators.

1. Ask about use of job skills.

Ask supervisors or team leaders who have employees in training to describe how top performers use information on the job. Encourage them to think of specific workers who are top performers. One might say, for example, that a top performer reads charts and responds with his own analysis, or sets machines correctly and checks settings thoroughly, or completes all job-related paperwork and tries to improve procedures. Continue to probe until you feel reasonably satisfied you have a complete list from the supervisors or team leaders. From this list, you can identify important areas (i.e., communication, problem solving, paperwork, etc.)

Next go through a three-step process in fleshing out these areas. The order of these steps is important.

2. Obtain descriptions of performance.

Ask supervisors or team leaders to:

a. describe the behavior of the top performers first;

b. then, describe the behavior of the bottom performers;

c. last, describe the average performers.

These behaviors will be used to provide descriptions and anchors for ratings. In relation to paperwork, for example, supervisors or team leaders might agree on the following descriptions:

Top: completes all job-related paperwork and tries to improve procedures;

Bottom: intimidated by job-related paperwork and does it poorly;

Average: does job-related paperwork but simply keeps pace.

As you work to develop these descriptions, new areas and categories may emerge. The supervisors or team leaders may give examples related to problem-solving or to machine setting, or some other area. These may later become additional rating scales.

3. Develop labels for performance areas.

Once the descriptions of top, bottom, and average performances are completed, work with supervisors or team leaders to develop acceptable labels for the categories. For example, labels might include items like machine setting, paperwork, communication, responsibility, and problem-solving.

4. Draft a rating scale.

After this discussion, draft a rating scale and submit it to the people you interviewed for comment and possible revision. Sometimes during revision, complex scales split to become two separate scales.

Examples of scales appear on the following pages.

EXAMPLE: JOB PERFORMANCE RATING SCALE

Employee Assessment - Overall Rating

Please rate each employee on a scale of 1-10 for each aspect below.

- An average employee would be rated 5.
- A top employee would be rated 8 or higher.
- A bottom employee would be rated 2 or lower.

NAME _____ **DATE** _____

COMMUNICATION

Bottom	Average	Top
won't speak; can't express self; nervous; won't shake hands	open, relaxed communicator; good listener and responder	processes information and responds with own analysis

---

1 2 3 4 5 6 7 8 9 10

CONCERNS, PROBLEM-SOLVING

Bottom	Average	Top
doesn't consider alternative solutions; makes irrelevant suggestions; never thinks of consequences	can suggest solutions, but not work through them in detail	suggests solutions and analyses consequences, including a timeline

---

1 2 3 4 5 6 7 8 9 10

Example: Job Performance Rating Scale

PAPERWORK

Bottom	Average	Top
intimidated by job-related paperwork and does it poorly	does job-related paperwork, simply keeping pace	completes all job-related paperwork and tries to improve procedures

1 2 3 4 5 6 7 8 9 10

MACHINE SETTING

Bottom	Average	Top
unable to set machines correctly	usually sets machines correctly, but doesn't always check settings	sets machines correctly and checks settings thoroughly

1 2 3 4 5 6 7 8 9 10

Informal Employee Job Assessment: Focus Group Interview of Supervisors

If there is not enough time or opportunity to develop formal rating scales in the manner described above, then an alternative which will give some idea of the gains produced by the training program is to conduct informal interviews with groups of supervisors or team leaders, as described below.

At the end of the training, the immediate supervisors or team leaders of the employees in the training class are interviewed as a group (of perhaps 4 or 5), in order to find out what changes they have noticed in the workplace behaviors of those employees who have just been trained. Questions could include:

1. What effects of the training class have you seen in the workers under your supervision or in your team?

   (Answers might include: more cooperative, work better in the team, take greater responsibility, improved self-confidence.)

2. What can they do now, but could not do before?

   (Answers might include: set machines accurately, check for machine errors, complete daily log, do routine work without close supervision.)

3. Has anyone else noticed that?

   (Follow up responses to Questions 1 and 2 to find out how many workers have changed in these ways.)

Employee productivity indicators

Besides measuring improvement in job-specific skills, you may also want to look for indications of an increase in worker productivity, or improvements in other areas such as attendance and safety. For this, your organization probably already keeps the records you need, but you should check that they are available in a form that you can use to evaluate the employees in your program. For example, production quality data can measure the success of the training program only if pre- and post-data for those employees in training can be isolated from that of other employees.

This section discusses several kinds of organizational records which you could use as pre- and post-measures to evaluate the impact of a workplace training program. Records include:

- Productivity indicators
- Attendance and punctuality records
- Safety records
- Productivity suggestions
- Retention and promotion records
- Records of improvement in plant-specific goals (i.e., increased participation in quality assurance activities, increased enrollment in voluntary education, etc.)

Some of these indicators occur infrequently (e.g., accidents, breakdowns, promotions). For this reason, these indicators are most useful when there are large numbers of employees in the evaluation or when pre/post comparisons cover long periods of time.

Productivity indicators

Many employers already collect data on productivity (i.e., defects, parts produced, customers serviced, complaints, etc). To be effective, information must be collected about each individual worker so changes resulting from that employee's training can be noticed. You should compile a list of productivity data currently gathered by your company. Team productivity data can be of use only when entire teams train together.

Attendance & punctuality

Sometimes training makes people want to come to work more often. Some programs have been able to demonstrate a positive impact on work attendance as a result. For this reason, it is useful to gather attendance information for both classes and work. Because absenteeism is usually infrequent, however, program impact can be influenced greatly by a single individual with many absences or by legitimate absences which influence everybody (i.e., health during flu season). For this reason, interpretation of attendance data must be done very carefully. Similar care must be taken with punctuality data — especially when only a small number of employees is involved.

Safety

In most industries, safety is a major concern for both employers and employees. Training classes often address safety issues and some programs directly support these efforts. It is difficult to demonstrate impact on safety, however, unless one collects information on large numbers of workers for a relatively long period of time before and after training.

Suggestion Forms

Most companies have suggestion boxes for collecting employee productivity and safety ideas. Employees are often more willing to express their opinions as they become more competent with reading and writing, and have experience writing suggestions forms. Some businesses also keep track of the dollar value of accepted suggestions.

Retention & promotion

Workplace training programs directly designed to support promotion or retention of employees during times of job restructuring are most likely to demonstrate impact. To determine impact, it is important to compare learners receiving training to comparable groups who did not receive training. In addition many companies have tests to determine promotion qualification. Comparing scores of program participants to other test takers or to the participants' own earlier test scores can assess impact on promotion. Similar patterns are possible in assessing who is retained during employer downsizing.